DiviSuite

User's Manual

DiviSuite 1.2

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1 Introduction

This User's Manual applies for DiviSuite 1.2 software. This manual includes general information about DiviSuite software, installation instruction and operating instructions.

For installation instruction of the ENENSYS' device delivered with the DiviSuite, please refer to the User's Manual of this device.

1.1 Product Overview

DiviSuite software is ENENSYS' analysis tool for analyzing RF parameters down to Video of Digital TV signals. It allows analysis and monitoring of **RF and baseband signals** and supports **MPEG2-TS, DVB, ATSC and ISDB** standards. It also features real-time capture and offline analysis as well as video decoding.

In order to receive the signal, DiviSuite need to be connected to an ENENSYS' USB adapter. Depending on this device, different interface and standards will be managed:

- RF, ASI, IP, File interface
- DVB-T2, DVB-T, DVB-C, DTMB, ATSC, ISDB standards…

Please, refer to §2.5 for a list of available devices.

DiviSuite is composed of **DiviSuite Basic** which can be enhanced by **plugin** activation. Available plugins are RF monitoring (RFScope plugin), MPEG2-TS analysis (TS Analyzer plugin) and T2-MI analysis (T2-MI Analyzer Plugin).

1.2 PC/Laptop minimum requirements

In order to ensure best performances, DiviSuite should be installed on a computer with at least a Dual-Core processor, 2GHz and 1GB of RAM.

2 Product Features

2.1 DiviSuite Basic

DiviSuite Basic allows reception of a Digital TV stream from RF or baseband though the adapter interface (RF front end, ASI or IP). This stream can be recorded in real-time in a file for offline play out. DiviSuite Basic also allows monitoring of PIDs' bitrate. Alarm management is embedded as well as log file management to ease monitoring of signals.

DiviSuite Basic features real-time decoding of audio and video contents of the incoming stream. It supports standard SD and HD format (as well as specific standards) encoded in MPEG-1/2, MPEG4 ASP, MPEG4 AVC (H.264) …

DiviSuite Basic can be enhanced through activation of its plugins:

- RF Scope: RF Signal Quality monitoring
- TS Analyzer: MPEG2-TS analysis
- T2-MI Analyzer: DVB-T2 T2-MI analysis.

However, DiviSuite Basic already allows reception of RF signals even if RFScope is not activated. T2-MI stream reception is also possible without T2MI Analyzer plugin. In this case, it is possible to display and record the content.

2.2 RF Scope Plugin

RF Scope plugin is the RF Signal Quality Monitoring feature of DiviSuite. It allows monitoring, in real-time, the RF parameters of the incoming signal[1]:

- Demodulation status (front end lock …)
- Signal Level, SNR (signal to noise ration), MER (Modulation Error Rate)
- Impulse Response (echoes)
- Bit error rates: LDPC iteration and BCH BER in DVB-T2, Viterbi and RS in DVB-T
- Constellation graph
- Modulation parameters: L1 signaling in DVB-T2 (PLP modulations parameters, …), TPS information in DVB-T

[1] *Available RF parameters and accuracy of the measurements depend on the RF adapter used, not on the DiviSuite software. Please, refer to your RF adapter datasheet for more information.*

2.3 TS Analyzer Plugin

TS Analyzer plugin is the analysis tool for MPEG2 Transport Stream. TS Analyzer plugin allows parsing stream content by decoding System Information (SI) tables. Stream can be parsed by tables (PAT, PMT, EIT…) and by services in addition to PID parsing feature of the DiviSuite Basic application. It also provides analysis tools for MPEG2-TS consistency checking as defined by ETSI TR 101 290 (aka ETR 290).

Table parsing supports all standard based on MPEG2-TS: raw MPEG2-TS (PAT, PMT), DVB, ATSC and ISDB. It also features private tables and section decoding through configurable scripts. Content parsing is also made easier thanks to DiviSuite search tool which allows searching for a specific pattern (label, value …) in the content of the stream.

ETR290 analysis features ETSI TR 101 290. It supports Level 1, 2 and 3. It features configurable alarms (parameter checking activation and threshold) that can be logged. PCR accuracy measurements are also available, providing real-time value display as well as history graph and PCR accuracy density graph. All ETR290 analysis can be done on specific PID or a service.

2.4 T2-MI Analyzer Plugin

T2-MI Analyzer plugin is the analysis tool for DVB-T2 Modulator Interface monitoring. It supports T2-MI Single and Multi-PLP streams. It allows real-time monitoring of DVB-T2 parameters and de multiplexing of PLP contents. These contents can then be analyzed in real-time with TS Analyzer plugin, decoded and displayed…

T2-MI monitoring features T2-MI parsing, T2 Frame analysis (T2 Superframe, T2 frame composition, BB frames…), L1 decoding (L1 pre and post, PLP modulation parameters…) and T2-MI timestamps analysis.

2.5 Supported Devices

The table below indicates which ENENSYS's devices are supported by the DiviSuite software. It also indicates which plugins are compatible with these devices.

Device	*Description*	*Standard*	*Interfaces*	*RFScope*	*TS Analyzer*	*T2MI Analyzer*
ReFeree T2	**DVB-T/T2 Measurement Receiver**. ReFeree T2 allows **recording** and **analyzing** of RF or baseband DVB-T and DVB-T2 signals through its RF, ASI or IP input.	DVB-T/T2 MPEG2-TS T2-MI	RF, ASI IP File	✓	✓	✓
DiviPitch ASI	**USB2.0 to ASI adapter**. DiviPitch ASI allows **playing** MPEG2-TS and T2MI files through ASI or IP output.	MPEG2-TS T2-MI	ASI IP File	✗	✗	✗

Device	Description	Standard	Interfaces	RFScope	TS Analyzer	T2MI Analyzer
DiviCatch ASI	**ASI to USB2.0 adapter**. DiviCatch ASI allows **recording** and **analyzing** MPEG2-TS and T2MI files through ASI or IP output.	MPEG2-TS T2-MI	ASI IP File	✗	✓	✓
DiviDual ASI	**ASI <-> USB2.0 adapter**. DiviDual ASI allows **playing**, **recording** and **analyzing** MPEG2-TS and T2MI streams through ASI or IP input and output.	MPEG2-TS T2-MI	ASI IP File	✗	✓	✓
DiviDual ASI+LVDS	**SPI/LVDS <-> USB2.0 adapter**. DiviDual ASI+LVDS allows **playing**, **recording** and **analyzing** MPEG2-TS and T2MI streams through SPI/LVDS, ASI or IP input and output.	MPEG2-TS T2-MI	SPI/LVDS, ASI IP File	✗	✓	✓
DiviDual ASI+TTL	**SPI/TTL<-> USB2.0 adapter**. DiviDual ASI+LVDS allows **playing**, **recording** and **analyzing** MPEG2-TS and T2MI streams through SPI/TTL, ASI or IP input and output.	MPEG2-TS T2-MI	SPI/TTL, ASI IP File	✗	✓	✓
DiviDual T2MI	**ASI <-> USB2.0 adapter**. DiviDual T2MI allows **playing**, **recording** and **analyzing** MPEG2-TS and T2MI files through ASI or IP input and output. *TS Analyzer and T2MI are included in the bundle*	MPEG2-TS T2-MI	ASI IP File	✗	✓	✓
DiviCatch RF-T	**DVB-T professional receiver** DiviCatch RF-T allows **recoding** and **analyzing** RF DVB-T signals. It also supports MPEG2-TS and T2-MI files through ASI or IP input.	DVB-T MPEG2-TS T2-MI	RF, ASI IP File	✓	✓	✓
DiviCatch RF-C	**QAM professional receiver** DiviCatch RF-C allows **recoding** and **analyzing** RF DVB-C Annex A, B and C signals. It also supports MPEG2-TS and T2-MI files through ASI or IP input.	DVB-C Annex A, B & C MPEG2-TS T2-MI	RF, ASI IP File	✓	✓	✓
DiviCatch RF-DTMB	**DTMB professional receiver** DiviCatch RF-DTMB allows **recoding** and **analyzing** RF DTMB signals. It also supports MPEG2-TS and T2-MI files through ASI or IP input.	DTMB MPEG2-TS T2-MI	RF, ASI IP File	✓	✓	✓

3 Installing DiviSuite

3.1 Software installation

3.1.1 DiviSuite installer

The software for installing the DiviSuite is stored on the USB key delivered with your ENENSYS device. It can be found in the same section of the readmefile.html as this manual, click on the icon

You can also download the latest release from the ENENSYS privileged area website (http://privileged.enensys.com). ENENSYS releases product updates which include new available features on its privileged area. Those updates are announced to users registered on the mailing list. **We highly recommend registering yourself on the mailing list in order to be informed of the latest product release.**

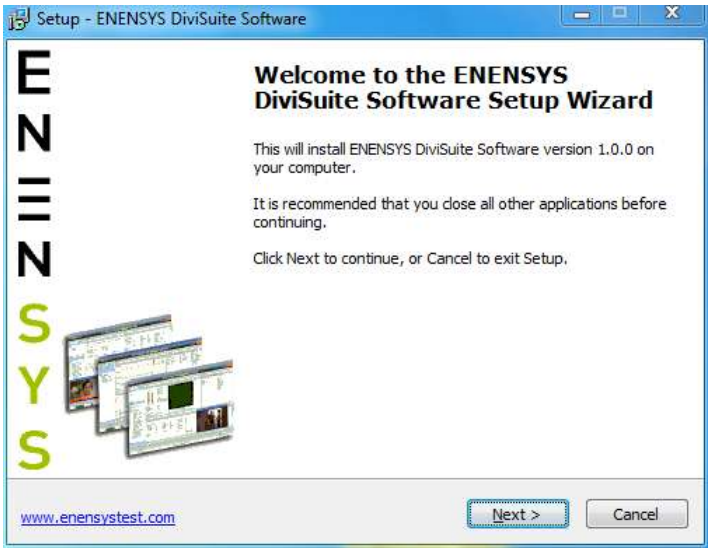
The DiviSuite software supports Windows XP, Windows Vista and Windows 7 operating systems, in 32 and 64 bits.

3.1.2 Installation

Before proceeding with installation:

- Please ensure that no ENENSYS USB device is connected to your computer
- If you already have ENENSYS' devices that are not supported by the DiviSuite software, you must first install the software for those devices.

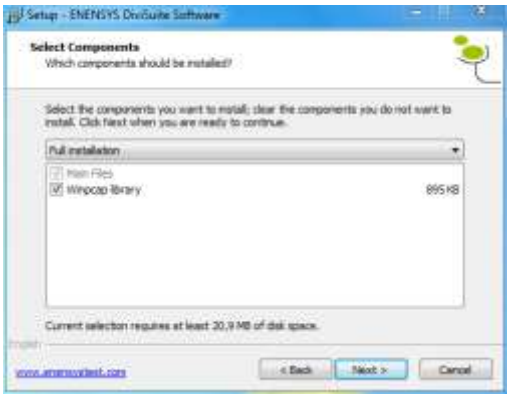
Launch the installer executable. This will display the following window.


Setup - ENENSYS DiviSuite Software
Welcome to the ENENSYS DiviSuite Software Setup Wizard
This will install ENENSYS DiviSuite Software version 1.0.0 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
www.enensystest.com
Next >
Cancel

DiviSuite installation process uses common Windows installation process. The following instruction details only specific screens. For other screens, please, follow the on screen instruction.

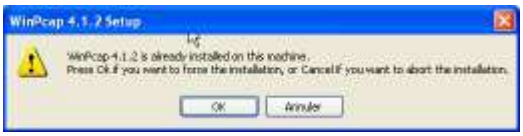
Select Components

Select "Full installation". Keep WinPcap library component. It is needed for IP input management. This will install WinPcap 4.1.2 version.



WinPcap 4.1.2 Setup:

If WinPcap 4.1.2 is already installed on your computer, you can cancel the installation. Else proceed with WinPcap installation



WinPcap 4.1.2 Setup:

WinPcap Installation: keep default values proposed by the installer.

ENENSYS 64 bits Driver Installation:

This applies only to 64bits operating systems, not to 32bits.
Proceed with on screen instructions for installation.

ENENSYS 64 bits Driver Installation:

This applies only to 64bits operating systems, not to 32bits.
Accept installation by clicking "Install".

Windows Security
Would you like to install this device software?
Publisher: ENENSYS TECHNOLOGIES
Always trust software from "ENENSYS TECHNOLOGIES".
Install
Don't Install
You should only install driver software from publishers you trust.

ENENSYS Driver Installation:

If operating system ask for a confirmation on installing ENENSYS driver software, select "Install this software anyway"

Windows Security
Windows can't verify the publisher of this driver software
Don't install this driver software
You should check your manufacturer's website for updated driver software for your device.
Install this driver software anyway
Only install driver software obtained from your manufacturer's website or disc. Unsigned software from other sources may harm your computer or steal information.
See details

VideoLAN installation:

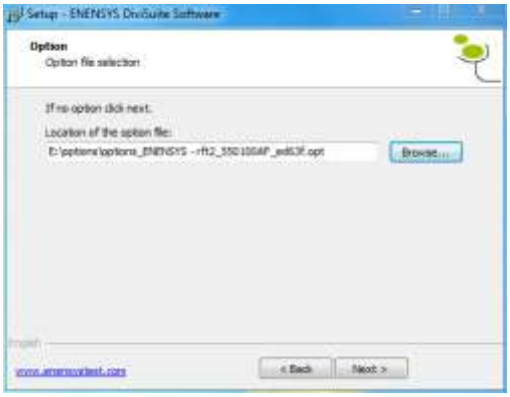
DiviSuite relies on VLC software for content decoding. It is necessary to install the latest release of this software. Follow the link provided in the Setup windows to proceed with VLC download and installation.

Setup - ENENSYS DiviSuite Software
Information
Please read the following important information before continuing.
When you are ready to continue with Setup, click Next.
Important notice : Video playback feature is optimized for VLC media player.
VideoLAN is a software project, which produces free software for video, released under the GNU General Public License.
It can be downloaded at the following address :
Next >

Plugin activation file selection:

If you have ordered plugins before delivery, the plugin activation file is provided to you in the USB key content, in the \options directory. It may also have been sent by email if ordered after delivery of the device.
This setup window allows importing the activation file before starting the DiviSuite application.

If you do not want to import an activation file, press "Next" to proceed with next step.



3.2 Plugin activation

Plugin activation can be done at install time (refer to §3.1.2). However, you may also proceed with plugin activation after having installed the application. This will be detailed later in this manual in §5.9.1.

3.3 Calibration File activation

If applicable to the device, calibration file installation should be done after the installation of the application. This will be detailed later in this manual in 5.9.4.

3.4 Connect your device

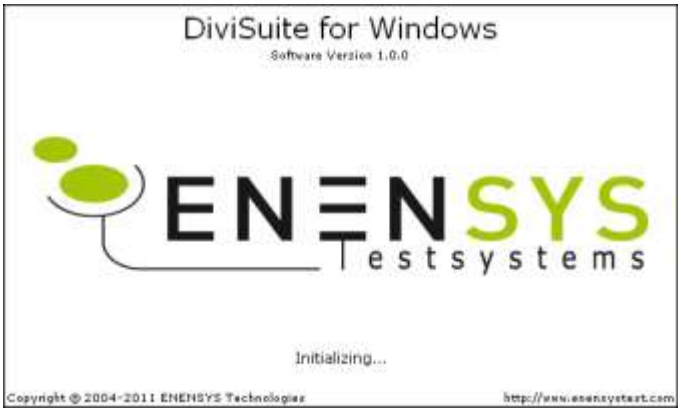
DiviSuite software is now installed on your computer; you can now connect your ENENSYS' device. Please, refer to the User's Manual of your device for instructions.

4 Starting with DiviSuite

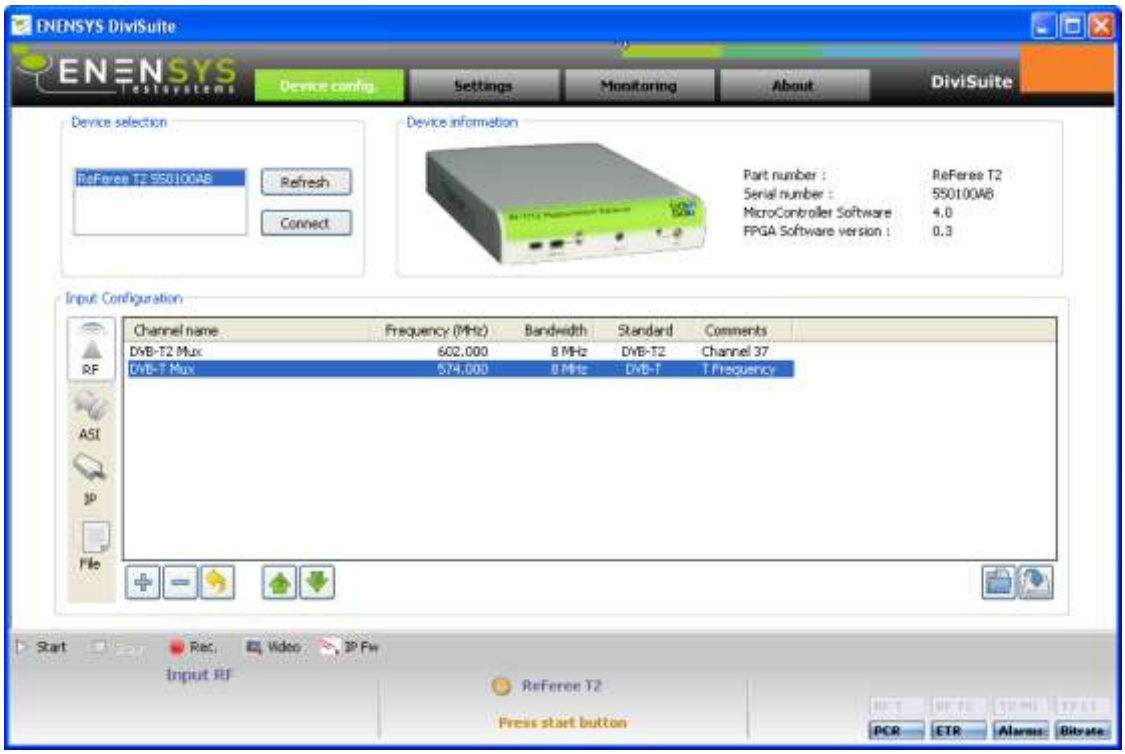
4.1 DiviSuite startup

To launch DiviSuite, double click on the icon created on your desktop at installation or click on the "Start Menu\ENENSYS\DiviSuite\DiviSuite 1.2" shortcut in the start menu of Windows also created at installation.

During application startup, the following splash screen is displayed.



Once started, the DiviSuite window appears:



5 DiviSuite Basic Graphical User Interface

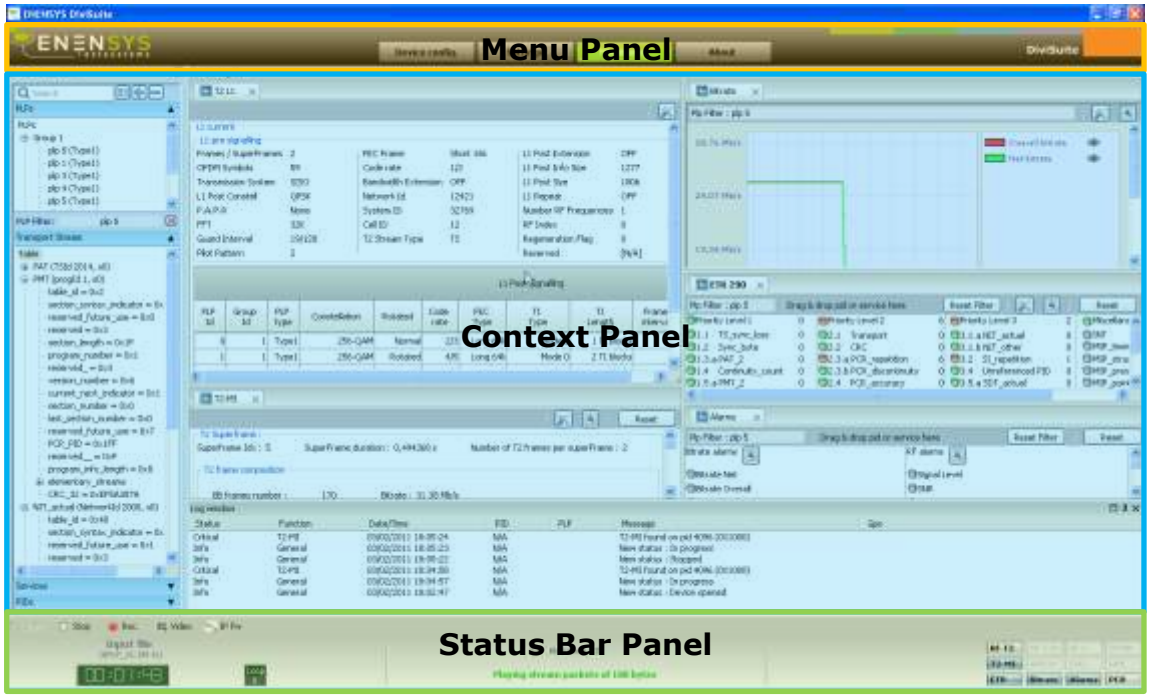
5.1 DiviSuite main window

The graphical interface of DiviSuite is organized in three main panels:

- **Menu panel**: this panel contains menu items to select the content displayed in the Context Panel. This panel is always visible.

- **Context panel**: this panel can change depending on the Menu Panel. It allows accessing to configuration and analysis features of the DiviSuite application.

- **Status Bar panel**: this panel contains control and status of the analysis features. It also contains controls for visible views of the Context panel. It is always visible.



5.2 Menu Panel

The Menu panel contains four menu buttons which allows selecting the current view in the Context panel:

- "Device config.": allows selection and configuration of the ENENSYS' device and its operation mode
- "Settings": allows configuration of DiviSuite Basic and plugins features.
- "Monitoring": displays the monitoring views of the current analysis.
- "About": general information about DiviSuite and plugin (including plugin activation).

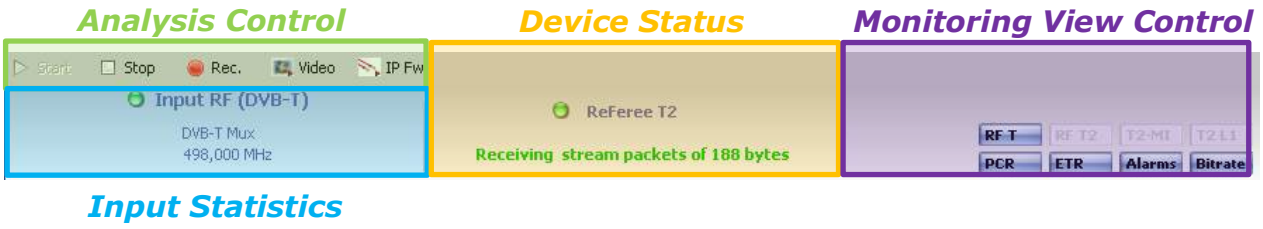
The selected view in the Context panel appears highlighted in green, "Device Config." View in the example.

5.3 Status Bar Panel

The Status Bar features control of the current analysis, status on the current input and selected device and control of the monitoring view.

It is composed of four different areas:

- Analysis Controls
- Input Statistics
- Device Status
- Monitoring View Controls



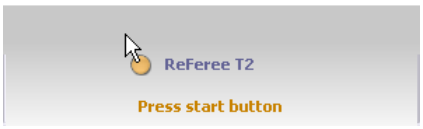
5.4 Status Bar Panel: Device Status

The Device Status gives information on current connected device and its state. It is composed of a status LED, device name and status on current input. The different states are given below.

State:
- No device connected
- Status LED is RED

Meaning:
- No device is connected to the computer or no device is connected to the DiviSuite

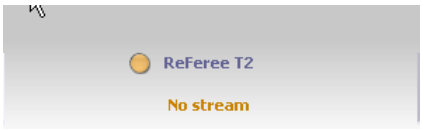
Corrective action:
- Connect your device to a USB port of the computer
- Go to Device Configuration and connect DiviSuite to the device



State:
- Device connected (name reported)
- Status LED is Orange

Meaning:
- A device is connected but no analysis has been started

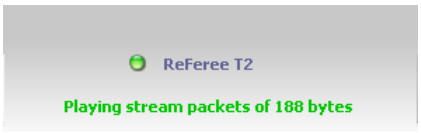
Corrective action:
- Start the analysis



State:
- Status LED is Orange blinking
- A device is connected (name reported), analysis is started but no stream is received

Meaning:
- Although the analysis is started, no valid incoming stream is detected.

Corrective action:
- Check connection of the device to the input source equipment
- Check input configuration parameters (RF channel, IP address…)
- Check input source signal validity



State:
- Status LED is Green blinking
- A device is connected (name reported), analysis is started and stream is received

Meaning:
- Analysis is running

5.5 Status Bar Panel: Analysis Controls

5.5.1 Overview

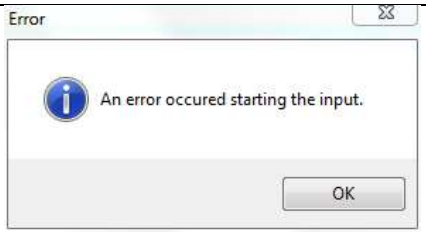
The analysis and playback controls allows controlling current analysis. A device must be connected to the DiviSuite software to make these controls active.

It features:

Start	**Input start**	It is used to start analysis or playback on the current input; refer to device configuration description for detailed information on input configuration.
Stop	**Input stop**	It is used to stop current analysis or playback.
Rec.	**Input stream recording**	It is used to record the current input stream in a file for offline analysis.
Video	**Video display**	It is used to decode and display video content using VLC player.
IP Fw	**IP Forward**	It is used to forward the input stream to an IP address (for example towards a professional receiver)

5.5.2 Input start

In order to be able to start reception of input stream, an input must be selected and configured (refer to §5.10.4 for information on input configuration). To stop an analysis, click on the Stop button. If input channel is not selected or misconfigured, the following error is displayed:



RF input is selected but no RF channel is selected

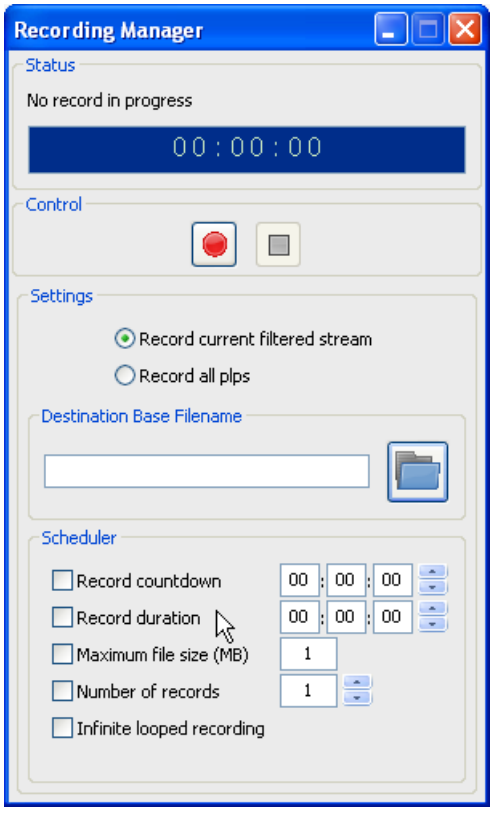
5.5.3 Record input stream

DiviSuite allows recording the input stream:

- In the case of RF DVB-T2 input, the incoming stream is the selected PLP (refer to §5.12.2 for information on selecting a PLP).
- In the case of RF DVB-T input, the incoming stream is the selected hierarchical mode (refer to 5.12.3 for information on selecting a hierarchical mode)
- In the case of **MPEG2-TS input**, the incoming content is the MPEG2-TS stream.
- In the case of **T2-MI input**, the content can be selected **to record either the selected PLP content or the full T2-MI content.**
    - To select a specific PLP, select the PLP in the Stream Tree View as described in 5.12.2.
    - To select the whole T2-MI stream, no PLP filtering should be done in Stream Tree View as described in 5.12.2.

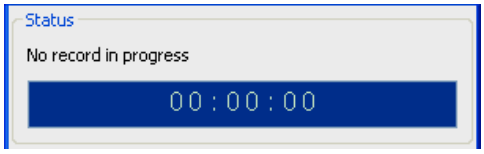
When starting **Input Stream Recording**, the window shown below is displayed. During recording, it can be closed without stopping recording. Click again on Record in Status Bar Panel to show again the window.

Input stream recording can be started before analysis is started. It is also possible to start and stop analysis while recording. In this case, recording will be suspended until analysis is restarted.



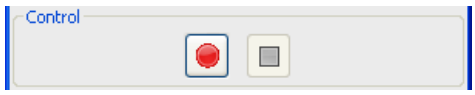
Status

- Give information on current recording (time elapsed, file size)



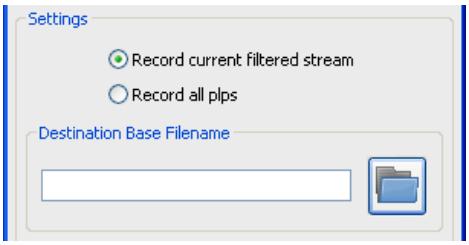
Control

- **Start** or **stop** recording



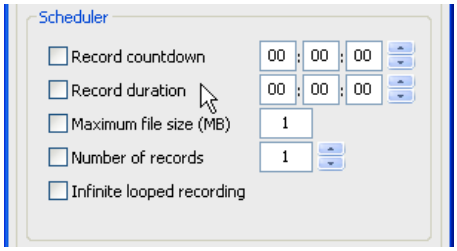
Settings

- **Record current filtered stream / Record all plps**
  - Record current filtered stream: in the case of DVB-T2 T2-MI, record the content of active PLP or complete T2-MI stream
  - Record all plps: in the case of DVB-T2 T2-MI, record content from all PLP in separate files.
  - No meaning in other cases (RF DVB-T2 record current PLP; other standard than DVB-T2 record MPEG2-TS standard)
- **Destination Base Filename:** base name of the recorded file. Finale file name will be:
  *{Destination Base Filename}[_{index}].*ts
  Where {index} is a number indicating the file index.
  Already existing files are not replaced. Instead, an index is incremented.



Scheduler

- **Record countdown:** check if a time countdown is needed before starting recording. Use input on its right to setup time countdown. This apply to complete recording process, this means that if multiple record are used, countdown will be done once, before the first record starts.
- **Record duration:** check if you want to limit recording to a specific duration. Use input on its right to setup recording duration.
- **Maximum file size:** check if you want to limit the file size to a specific size. Use input on its right to setup maximum file size in Mbytes
- **Number of records:** check if you want to record multiple files. A new record will be created each time Record duration is elapsed and/or each time Maximum file size is reached.
- **Infinite looped recording:** repeat infinitely the recording, with all settings except countdown done once, until recording is manually stopped.

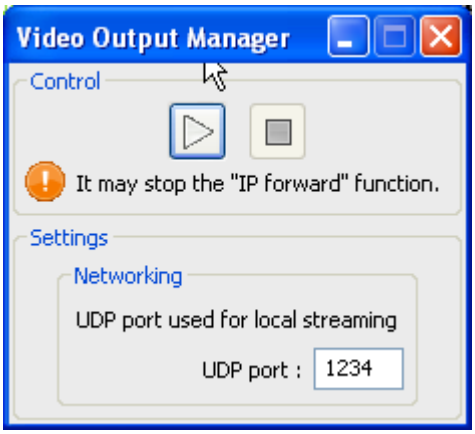


5.5.4 Video display

Starting video display will show the Video Output Manager window. Video display uses VLC media player. During video display, the Video Output Manager window can be closed without stopping video display. Click again on Video display in Status Bar Panel to show again the window.

In the case of multiple PLPs, the content displayed will be the selected PLP (refer to §TBD for information on selecting a PLP). Selected PLP can be changed and video displayed will be automatically updated.

Note: Connection between the DiviSuite and VLC player is done through a UDP connection (local host address, UDP port configurable). This connection is shared with IP Forward function and thus may interfere with it if IP Forward IP address is different from local host or UDP port is different.

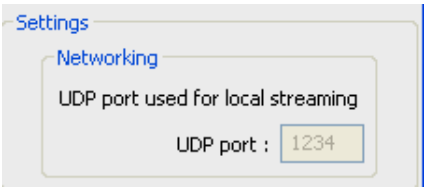


Control

- Start or Stop VLC player

Control

- UPD port used for local streaming: VLC reads the video content from a localhost UDP connection. The UDP port can be configured to prevent from collision with other softwares.



Starting Video Display will launch VLC media player. Please refer to VLC User's Manual for more information.

5.5.5 IP Forward

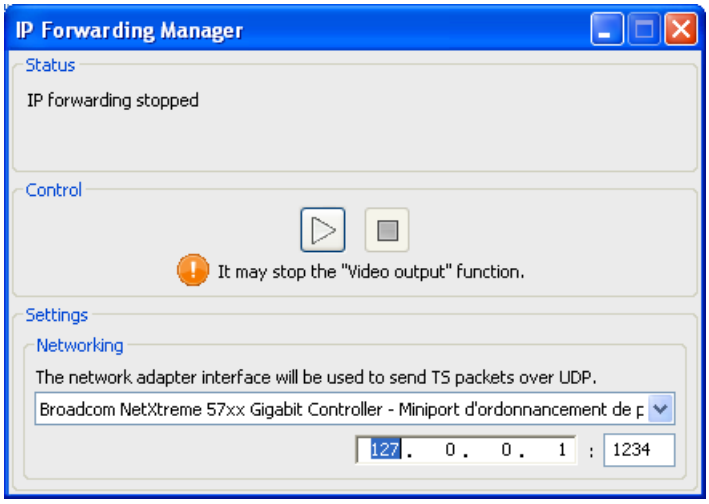
IP Forward can be used to send the input stream content towards remote equipment through your IP network. It supports unicast or multicast transmission. Content is broadcasted in MPEG2-TS over UDP format. The Ethernet controller used is one of the computer controller.

Starting IP Forward will show the IP Forwarding Manager window. During IP forward, the IP Forwarding Manager window can be closed without stopping IP forward. Click again on IP forward in Status Bar Panel to show again the window.

In the case of multiple PLPs, the content forwarded to IP will be the selected PLP (refer to 5.12.2 for information on selecting a PLP). Selected PLP can be changed and forwarded content will be automatically updated.

- In the case of a T2-MI input stream, either a specific PLP, either the complete T2-MI stream can be forwarded to IP. To select the whole T2-MI stream, no PLP filtering should be done in Stream Tree View as described in 5.12.2.

Note: IP Forward function is shared with Video Display function and thus may interfere with it if IP address is different from local host or UDP port is different.


IP Forwarding Manager
Status
IP forwarding stopped
Control
It may stop the "Video output" function.
Settings
Networking
The network adapter interface will be used to send TS packets over UDP.
Broadcom NetXtreme 57xx Gigabit Controller - Miniport d'ordonnancement de p
127 . 0 . 0 . 1 : 1234

Status

- Indicates if IP Forwarding is currently stopped or started.

Control

- Start or Stop IP Forwarding

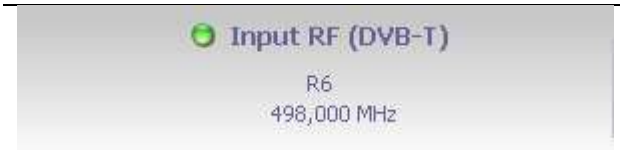
Settings

- Network adapter: select the Ethernet controller of the computer through which the IP Forward will send datas
- IP address and port: identify the destination equipement. IP address could be unicast or multicast.

Settings
Networking
The network adapter interface will be used to send TS packets over UDP.
Broadcom NetXtreme 57xx Gigabit Controller - Miniport d'ordonnancement de p
127 . 0 . 0 . 1 : 1234

5.6 Input Statistics

Input statistics displays information about the current input stream. It depends on the input type. Each case is detailed below.



RF Input:

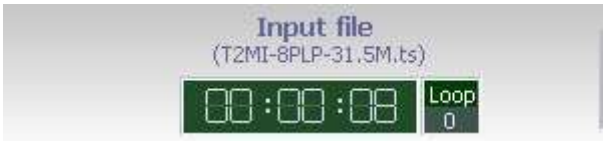
- The LED indicates the state of the RF front end. Green means locked (signal found), RED means unlock
- Indicates the channel name as defined in channel list of Device Configuration panel, as well as RF frequency and standard.

ASI Input:

- Indicates the ASI input is in use.

IP Input:

- Indicates the IP stream name as defined in channel list of Device Configuration panel, as well as IP address and UDP port.



File Input:

- Indicates the current played file
- Indicates the elapsed time in the file (HH:MM:SS) as well as loop count (how many time the file list has been played).

5.7 Monitoring View Control

Monitoring View Control allows showing or hiding monitoring views of the Context Panel.

Note: Hiding or showing analysis view does not mean starting or stopping an analysis. This one continues to be ran in background even if its monitoring view is hidden.

Controls of this area have different states depending on conditions listed below. The example below show the possible states for the RF-T2 control. It is applicable to other controls.

Alarms	The analysis is enabled and its view is displayed in the Monitoring View
Bitrate	The analysis is enable but its view is not displayed in the Monitoring View
RF T2	The analysis is disabled

There are three reasons for a disabled analysis:

- The analysis is not supported by the connected device.
  - Contact ENENSYS TestSystems team for information on devices supporting this analysis.
- The analysis is part of a plugin and the plugin has not been activated.
  - Validate that the plugin has been activated
- The analysis has been disabled in the Setting panel.
  - Go to settings panel and enable the analysis.

The available controls are

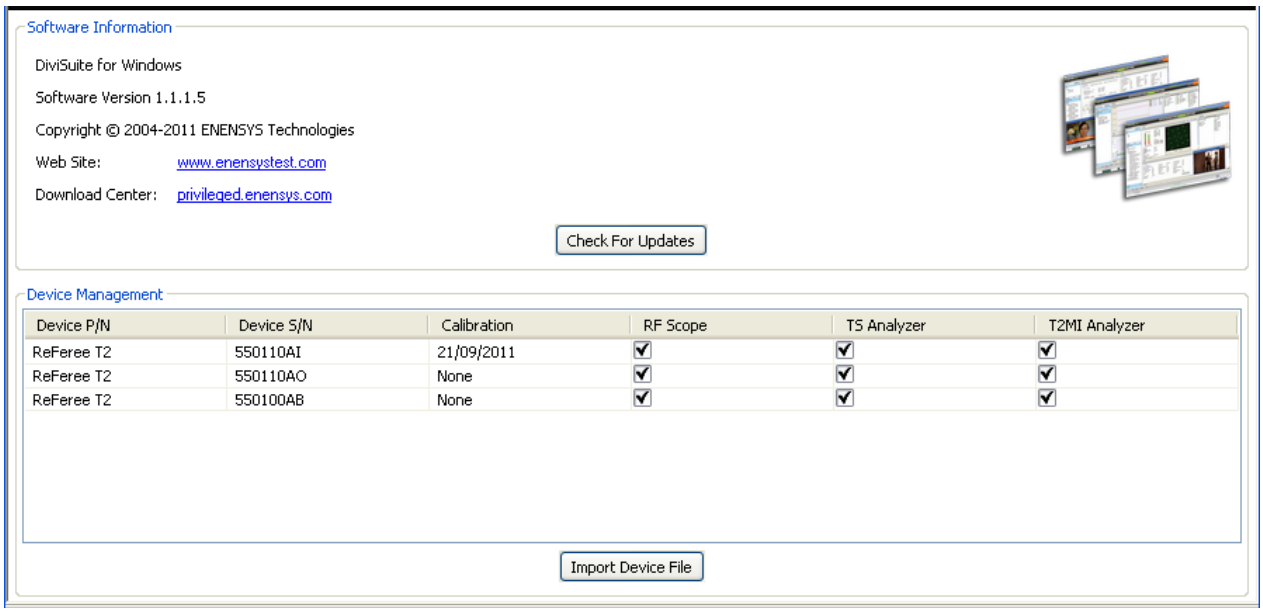
RF T2	RF Scope in DVB-T2 Monitoring View, needs RFScope plugin
RF T	RF Scope in DVB-T Monitoring View, needs RFScope plugin
ETR	ETR 290 Monitoring View, needs TS Analyzer plugin
PCR	PCR Monitoring View, needs TS Analyzer plugin
Bitrate	Bitrate Monitoring View, included in DiviSuite Basic
Alarms	Alarms Monitoring View, included in DiviSuite Basic
T2-MI	T2-MI Monitoring View, needs T2MI Analyzer

5.8 Context Panel

The content of this panel depends on the selected menu in Menu Panel: Device Configuration, Settings, Monitoring and About views. This chapter describes the content of those views of the DiviSuite Basic software. Dedicated chapters are also available in this manual for specifics views of each plugin.

5.9 Context View: About

This view gives information about the software version of the installed DiviSuite software. It also gives access to the plugins information and activation.



5.9.1 Software Information

It contains information on the application and ENENSYS contact.

- **Software Version:** indicates the version of the installed application.
- **Web Site:** click on the link to open a browser window on the ENENSYS TestSystem website
- **Download Center:** click on the link to open a browser window on the ENENSYS privileged area. You will find there information on the current release of the products, datasheet, manuals and software revision. You need to register on this website to gain full access. It is highly recommended by ENENSYS support team to ensure you will have information on latest release.
- **Check For Updates:** when you click on this button, the application will check if a newer revision exists for the DiviSuite application. If this is the case, it will propose you to install it.

5.9.2 Device Management

It contains information on the option files and calibration files already registered with your application.

For example, the following information means:

Device P/N	Device S/N	Calibration	RF Scope	TS Analyzer	T2MI Analyzer
ReFeree T2	550110AI	21/09/2011	☑	☑	☑
ReFeree T2	550110AO	None	☑	☑	☑

- ReFeree T2 S/N 550110AI is registered
  - With RFScope, TS Analyzer and T2MI analyzer plugin enable.
  - A calibration file, generated on September, the 21st of 2009 has also been provided
- ReFeree T2 S/N 550110AO is registered
  - With RFScope, TS Analyzer and T2MI analyzer plugin enable.
  - No calibration file has been registered for this device.

5.9.3 Plugin activation

Each plugin is activated for a specific device and is available only for this device[1].

To activate a plugin, click on the Import button and select the plugin activation file provided by ENENSYS TestSystems. Application will then be restarted in order to activate the new plugins.

5.9.4 Calibration activation

Each calibration file is activated for a specific device and is available only for this device[1].

To import a calibration file, click on the Import button and select the calibration file provided by ENENSYS TestSystems. Application will then be restarted in order to activate the calibration.

[1] DiviSuite can be installed on multiple computers. It is then necessary to activate plugins and calibration for a specific device on all these computers to be able to use the device on each computer.

5.10 Device Config View

5.10.1 Overview

The device configuration view allows:

- Selection and connection to a device
- Selection and configuration of the inputs of the device

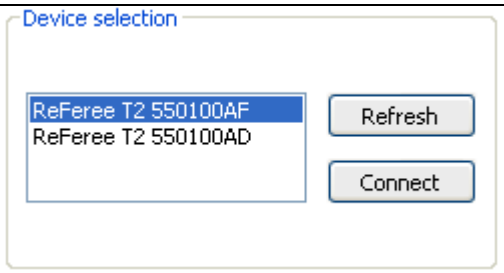
When launching the DiviSuite software without a connected device or after unplug of the device from the USB, the following view is displayed.

The Device Configuration view has three main areas:

- **Device selection:** allows listing, selecting and connecting to a specific device. Only the supported devices will be listed in the device list.
- **Device Information:** gives information about the connected device.
- **Input Configuration:** allows selecting and configuring the inputs of device that will be used for analysis.

5.10.2 Connect a device

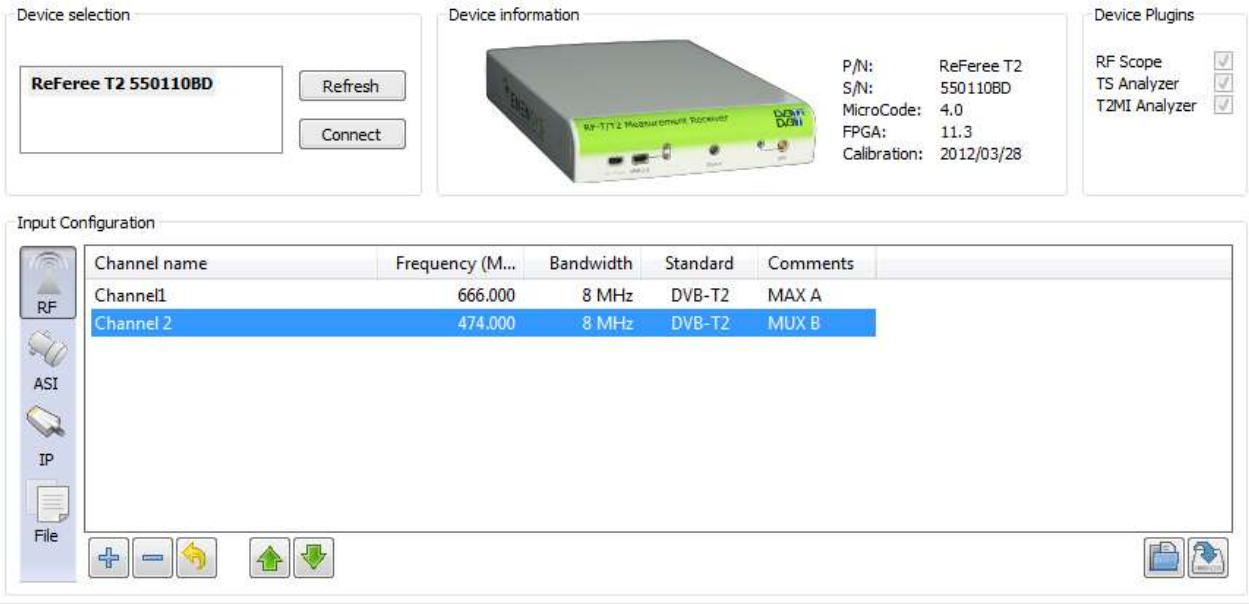
To connect to a device, follow the procedure describe below.

Connect the device to a USB port of the computer	
Click the Refresh button of the Device Selection area. This will update the Device Selection area with the list of supported devices[1]. Devices are identified by their part number and serial number.	
Select the device to connect to and click connect. It will update the Device information and Input Configuration areas.	
To select another device while already connected, select the new device and click connect.	

If a device is already connected to the DiviSuite, the connection is automatically done as described in §4.1.

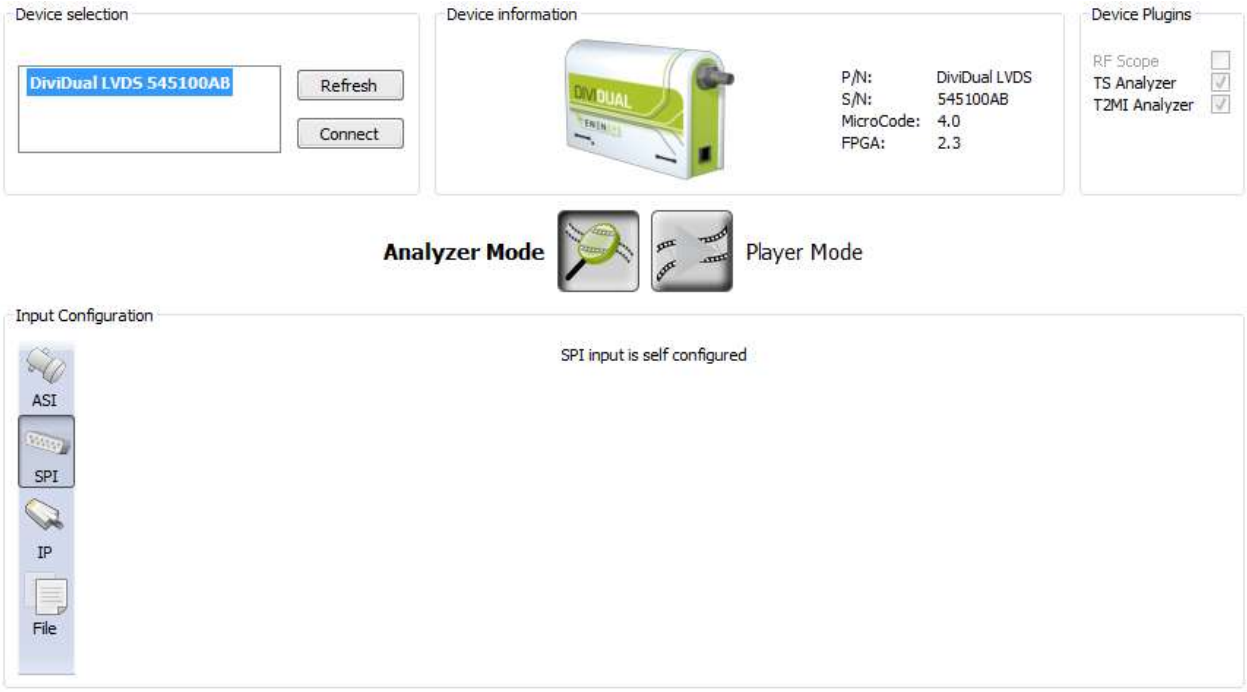
[1] It may be needed to click again the "Refresh" button until the operating systems detects and configures the USB device.

Once connected, the following view is displayed (Input Configuration content depends on the connected device).



5.10.3 Select device mode

For devices supporting player and analyzer mode, the following view is displayed. The "Analyzer Mode" and "Player Mode" buttons allow selecting between analyzer and player mode.



5.10.4 Device Information

Device Information area allows identifying the device and its software revision as to be provided to ENENSYS support.

The **"Calibration"** information provides the date of the calibration file registered for the connected device. It only applies to ReFeree T2 devices.

Important Note: *If the calibration information for ReFeree T2 is set to "None", no calibration file is registered and RF measurements will not be valid. Please refer to §3.3 for calibration file registration.*

5.10.5 Device Plugins

Device Plugins area gives information on the registered plugins for the connected device.

Important Note: *If a plugin is not registered, the features belonging to this plugin will not be activated. Please refer to §3.2 for plugin registration.*

5.10.6 Input Selection and Configuration

5.10.6.1 Input selection and configuration with analysis stopped

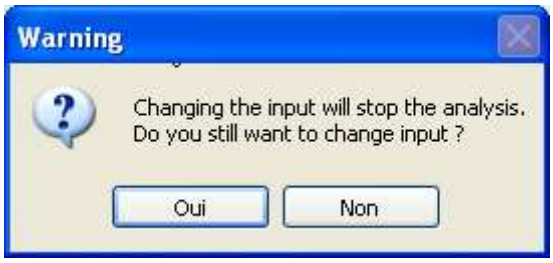
Input Configuration view allows selecting and configuring the input that will be used for the analysis and its parameters. Most of the inputs manage a list of configuration: RF channels, IP streams… Configuration for such inputs shares a same framework allowing adding, removing and modifying channel. This is described in the following chapters.

Once an input has been selected and configured, analysis can be started for this input (refer to *§5.5.2* for information on starting an analysis).

5.10.6.2 Input selection and configuration with analysis started

While an analysis is started, configuration of the input is disabled. Analysis must be stopped by the user to enable modification.

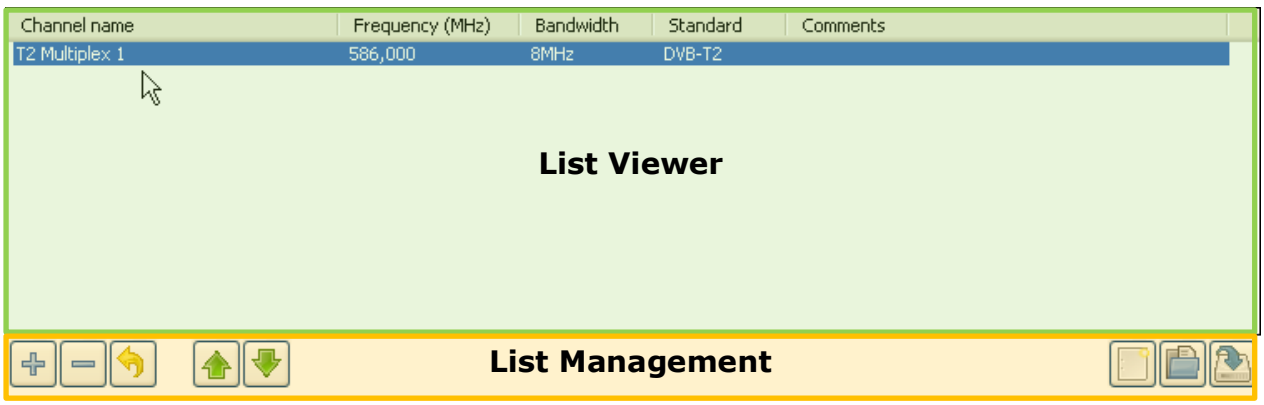
While an analysis is started, selecting another input will stop the analysis. The following confirmation message is displayed to prevent from stopping the analysis.



If user choose to stop the analysis, he will need to restart it manually as describe in *§5.5.2*.

5.10.6.3 List configuration

Input configuration includes a list management mechanism. This chapter describes the common management of such list.



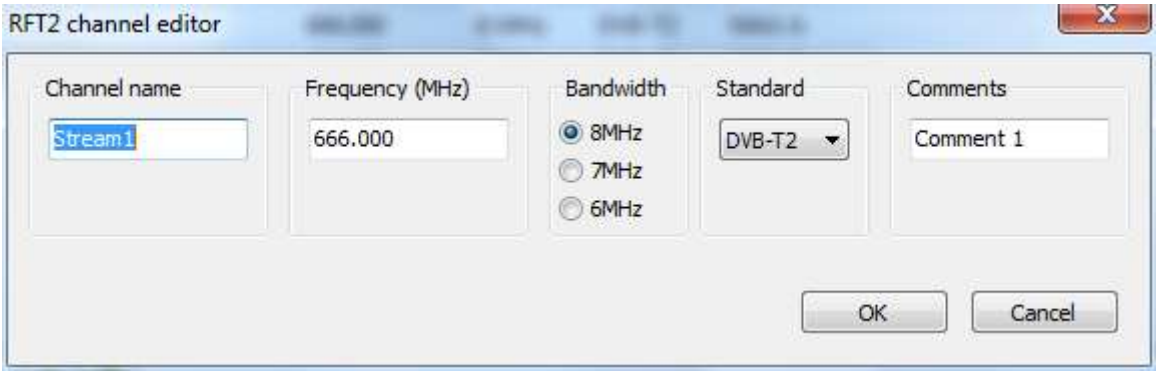
List Viewer area depends on the input. It shows each element of the list for the selected input (the example above shows list viewer of RF Input). Elements of the list can be selected by clicking on it. It then appears highlighted, as in the example above.

List Management area contains the buttons for managing the list. Their usage is described below.

	Add an element to the list. It opens a window for selecting the parameters of the element. This window depends on the input and will be described in the next chapters.
	Remove the selected element from the list
	Modify the selected element of the list. It opens the same window as for the add element with fields already configured.
	Move the selected element up in the list
	Move the selected element down in the list
	Create a new list. Current list will be deleted. A confirmation message is displayed before deleting the list
	Open a list. It loads a list from a file (this deletes the current one). An open file window is opened for file selection
	Save current list. It saves the current list to a file. An save file window is opened for file selection.

5.10.6.4 RF Input configuration – ReFeree T2

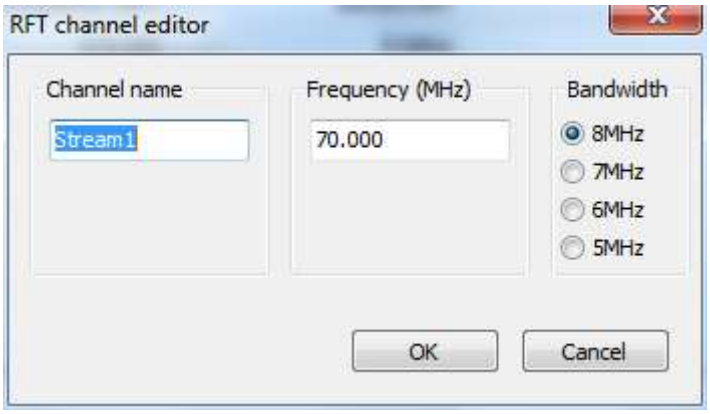
Select the "RF" tab of the "Input Configuration". Then add channels to the channel list by clicking the "+" button. This will open the channel editor window.



- **Channel Name** and **Comments**: user defined text
- **Frequency:** frequency of the channel to tune to in MHz.
- **Bandwidth:** bandwidth of the selected channel
- **Standard:** select DVB-T or DVB-T2 to choose which standard is to be used for channel decoding.

5.10.6.5 RF Input configuration – DiviCatch RF-T

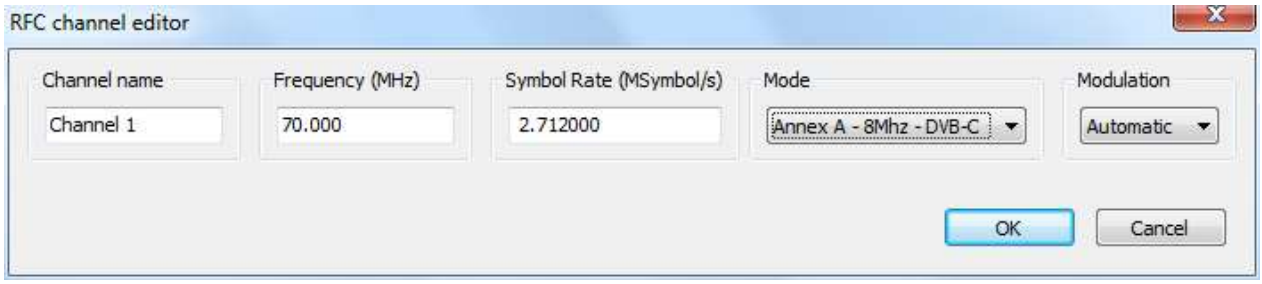
Select the "RF" tab of the "Input Configuration". Then add channels to the channel list by clicking the "+" button. This will open the channel editor window.



- **Channel Name**: user defined text
- **Frequency:** frequency of the channel to tune to in MHz.
- **Bandwidth:** bandwidth of the selected channel

5.10.6.6 RF Input configuration – DiviCatch RF-C

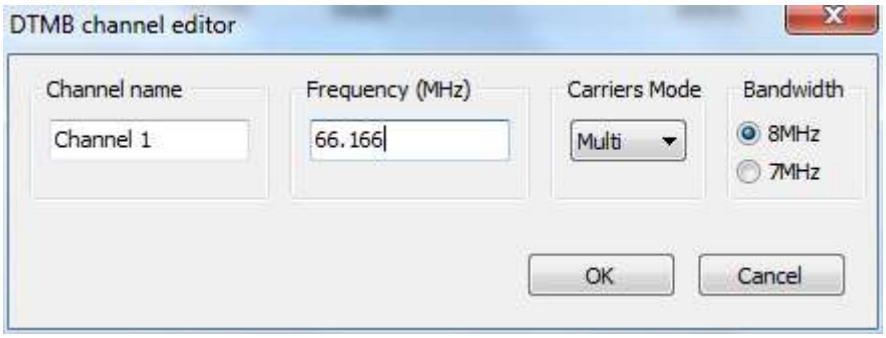
Select the "RF" tab of the "Input Configuration". Then add channels to the channel list by clicking the "+" button. This will open the channel editor window.



- **Channel Name**: user defined text
- **Frequency:** frequency of the channel to tune to in MHz.
- **Symbol Rate:** Symbol rate of the selected channel in MSymbol/s
- **Mode:** DVB-C Mode of the channel
- **Modulation:** select automatic for automatic configuration of the modulation or force a specific modulation.

5.10.6.7 RF Input configuration – DiviCatch RF-DTMB

Select the "RF" tab of the "Input Configuration". Then add channels to the channel list by clicking the "+" button. This will open the channel editor window.



- **Channel Name**: user defined text
- **Frequency:** frequency of the channel to tune to in MHz.
- **Carrier Mode:** multi or single carrier mode selection
- **Bandwidth:** Bandwidth of the channel

5.10.6.8 Configure ASI input

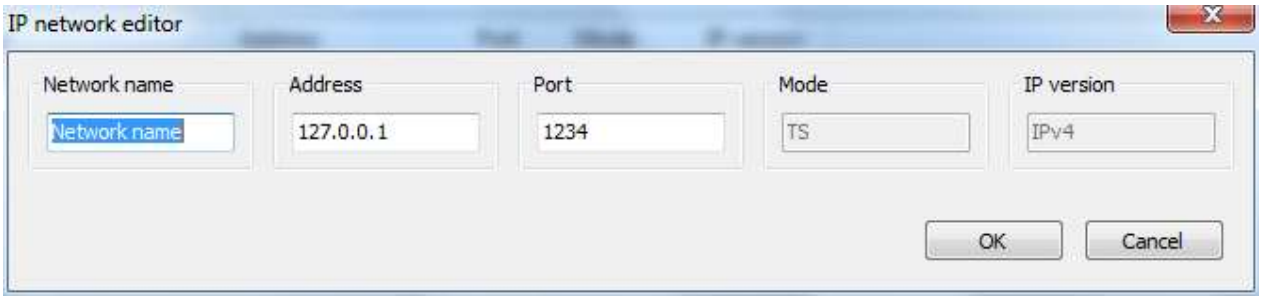
Select the "ASI" tab of the "Input Configuration". No specific configuration is needed on ASI input (auto detection mode is active).

5.10.6.9 Configure SPI input

Select the "SPI" tab of the "Input Configuration". No specific configuration is needed on SPI input (auto detection mode is active).

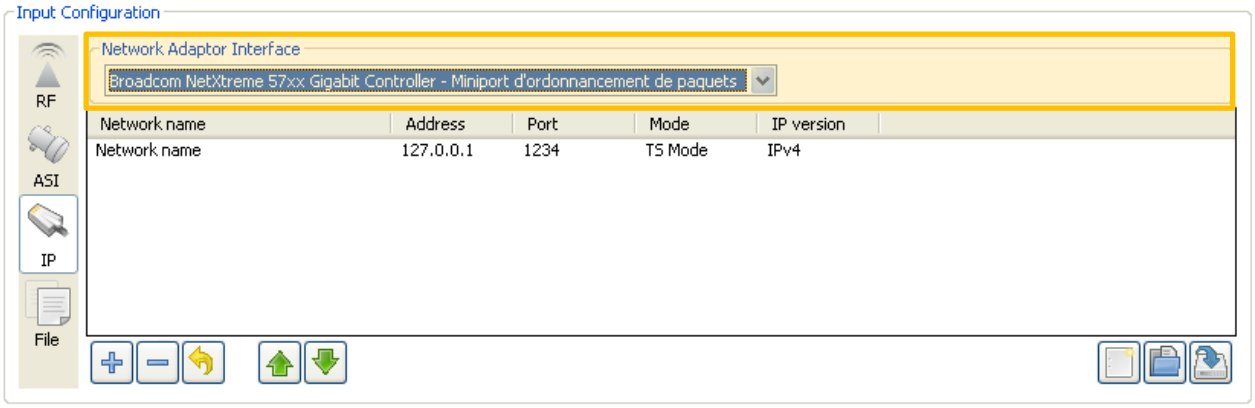
5.10.6.10 Configure IP Input

Select the "IP" tab of the "Input Configuration". Then add IP streams to the IP stream list by clicking the "+" button. This will open the IP streams editor.



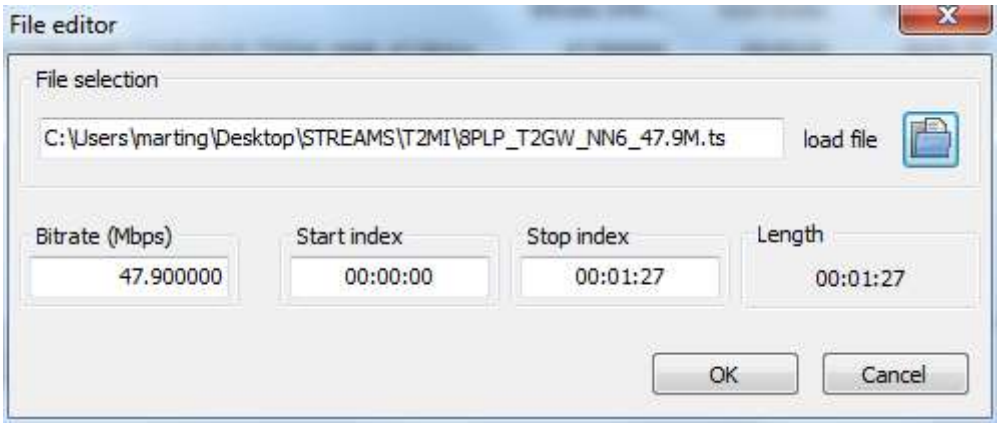
5.10.6.10.1 Ethernet Controller selection

IP input use one of the Ethernet controllers of the computer. It is needed to selects which controller needs to be used. The Network Adaptor Interface list all detected controllers. Use this field to select which one should be used for IP reception.

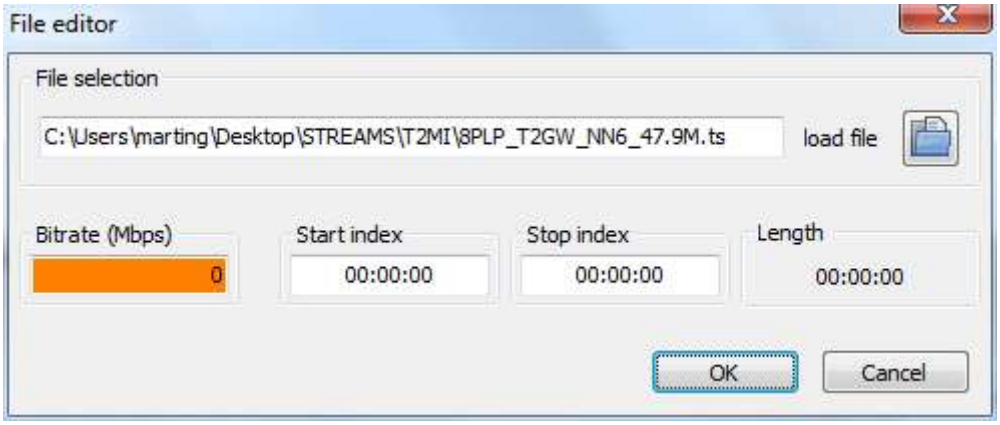


5.10.6.11 Configure File Input

Select the "File" tab of the "Input Configuration". Then add files to the File list by clicking the "+" button. This will open the File editor.

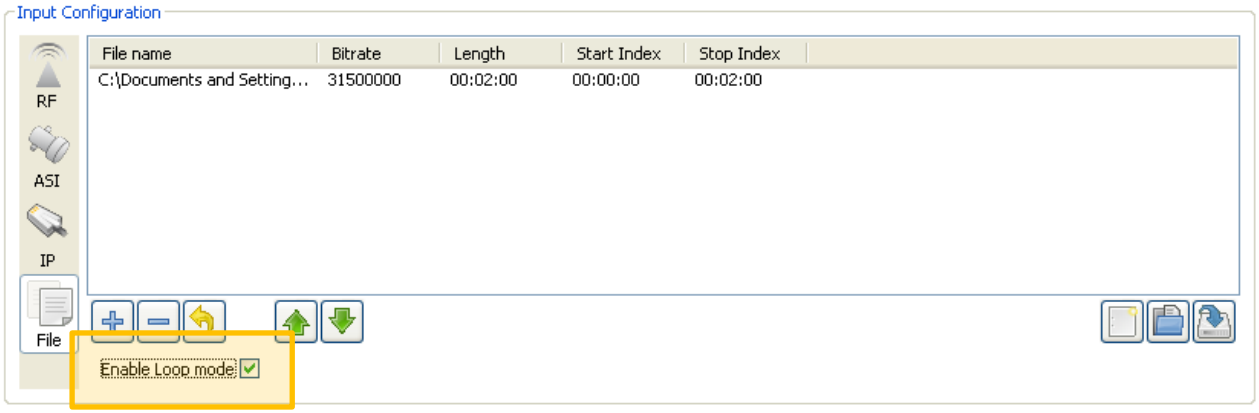


The DiviSuite supports MPEG2-TS files and T2-MI files. For MPEG2-TS files which contain PCR information, bitrate is automatically computed and filled. For T2-MI files or MPEG2-TS files that do not contain PCR information, it is requested to give the bitrate of the stream. Mandatory fields with invalid value appear with an orange background.



5.10.6.11.1 Loop mode activation

DiviSuite allows playing in loop mode the list of files of the File input. To enable or disable the loop mode, check or uncheck the "Enable Loop mode" field.



5.10.7 Output Selection and Configuration

Output Configuration view allows selecting and configuring the output that will be used for the playback and its parameters. **This only applies to Player Mode**. Refer to §5.10.3 for selecting the Player Mode.

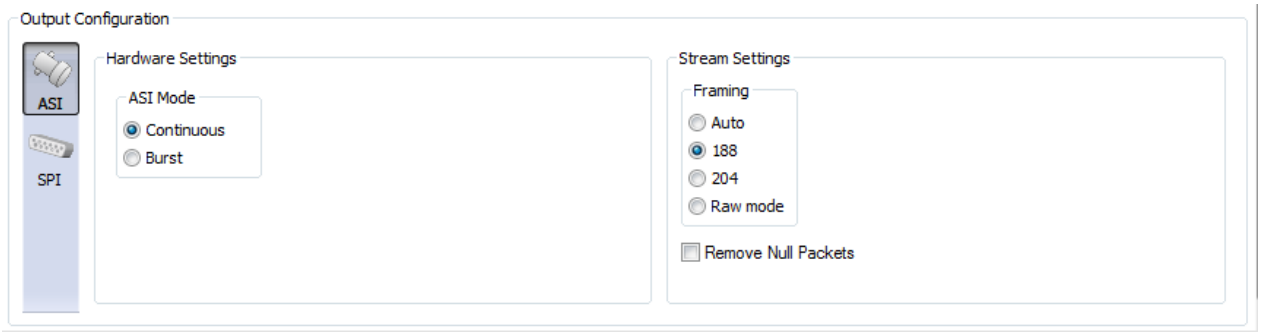
In Player Mode, the device uses a file as stream input. You need to configure the file input before starting the playback. Please, refer to §5.10.8 for configuring file input.

Important Note: Output Configuration is available only when no playback is running.

Once an output has been selected and configured, playback can be started (refer to *§5.5.2* for information on starting a playback).

5.10.7.1 Configure ASI output

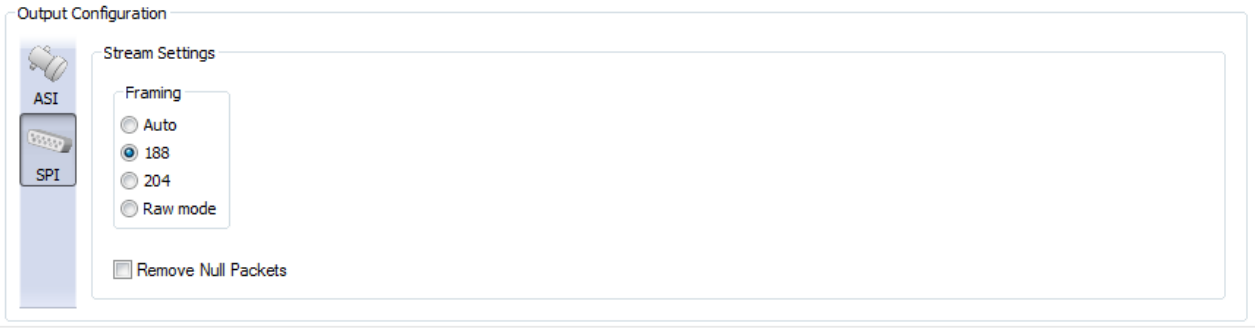
Select the "ASI" tab of the "Output Configuration". Then configure settings for the ASI output.



- **ASI Mode**: select between Continuous or Burst mode.
  - In **Continuous mode**, ASI sync words are added between and inside MPEG2-TS packets.
  - In **Burst mode**, ASI sync words are only added between MPEG2-TS packets.
- **Framing:** Select MPEG2-TS packet size on the ASI output.
  - **Auto:** use the framing used in the input file
  - **188:** force a 188 bytes packet length, whatever the input file framing is. If input file framing is 188 bytes, Read Solomon bytes are removed from the MPEG2-TS packets.
  - **204:** force a 204 bytes packet length, whatever the input file framing is. If input file framing is 188 bytes, null Reed Solomon values are added to the MPEG2-TS packets.
  - **Raw Mode:** In Raw Mode, the device does not take into account the synchronization byte of the MPEG2-TS packets of the input file. All bytes from the file to the ASI output.
- **Remove Null Packets:** When selected, the device sends the source MPEG2-TS stream without the MPEG2-TS null packets (PID 0x1FFF) contained in it. This will result in a variable bitrate transport stream on the ASI output.

5.10.7.2 Configure SPI output

Select the "SPI" tab of the "Output Configuration". Then configure settings for the SPI output.



- **Framing:** Select MPEG2-TS packet size on the SPI output.
  - **Auto:** use the framing used in the input file
  - **188:** force a 188 bytes packet length, whatever the input file framing is. If input file framing is 188 bytes, Read Solomon bytes are removed from the MPEG2-TS packets.
  - **204:** force a 204 bytes packet length, whatever the input file framing is. If input file framing is 188 bytes, null Reed Solomon values are added to the MPEG2-TS packets.
  - **Raw Mode:** In Raw Mode, the device does not take into account the synchronization byte of the MPEG2-TS packets of the input file. All bytes from the file to the SPI output.
- **Remove Null Packets:** When selected, the device sends the source MPEG2-TS stream without the MPEG2-TS null packets (PID 0x1FFF) contained in it. This will result in a variable bitrate transport stream on the SPI output.

5.11 Settings view

Settings view allows configuring the analysis of the DiviSuite software.

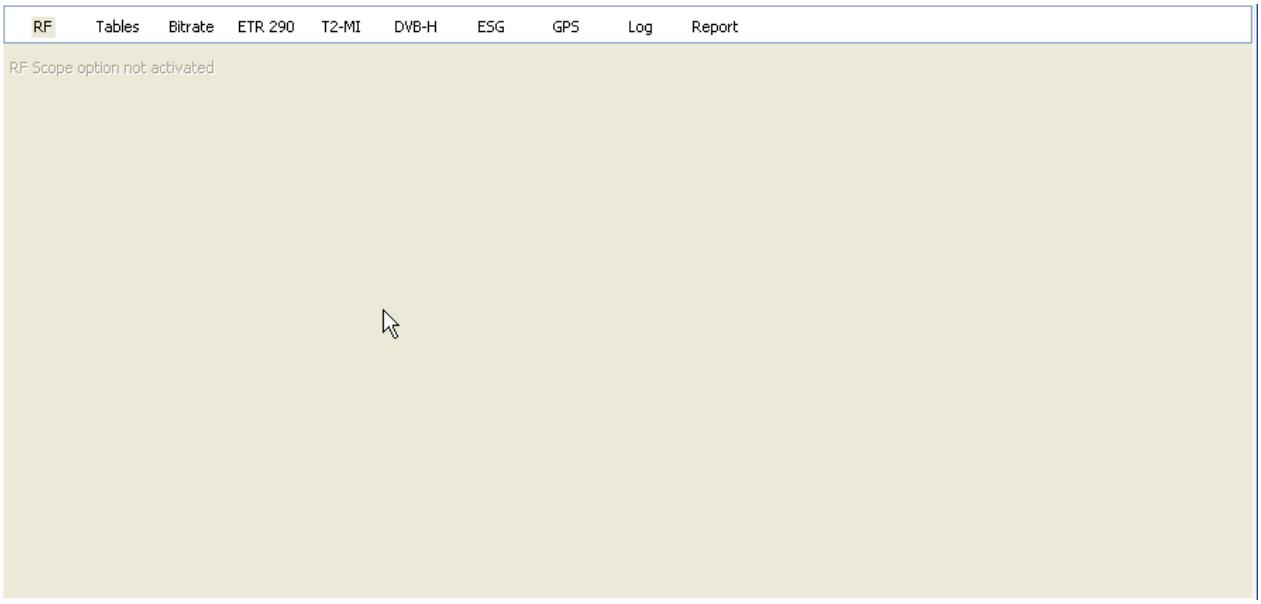
It has one menu bar per analysis type and a settings area depending on the selected menu bar.

When an analysis is not enabled, fields of the settings are disabled (greyed). If the analysis depends on plugin activation, it is indicated on top of the settings area. The example below does not have RFScope plugin activated.

Settings comprise various possibilities:

- **Activation or deactivation of an analysis:** deactivating an analysis may be useful if the used computer do not have the required processing power.
- **Activation, configuration and logging of alarm:** alarms can be defined for some parameters analysis (refers to §0 for alarm usage). In the Settings view, alarm can be enabled or disabled per analyzed parameter. For each alarm, it is also possible to enable or disable logging of an alarm. Last, each alarm as configurable threshold.

The following chapters describe the settings for **DiviSuite Basic** software: bitrate and log. Description for plugin specific settings will be described in the plugin dedicated chapter.



5.11.1 Validation of a setting

In all settings panel, when changing a value, a confirmation is needed. In this case, the icons are displayed. A click on icon validates the modification while a click on icon discards the modification.

These icons allows validation or discards of all settings displayed in the current view.

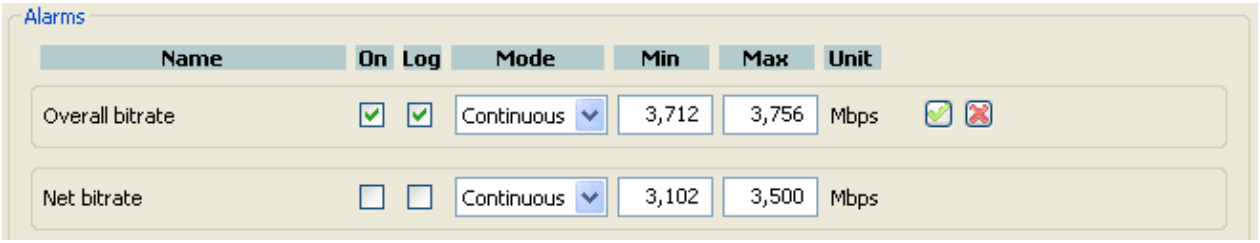
5.11.2 Activation and log of an alarm

To enable an alarm, check the "On" parameter on the line of the alarm and validate the modification.

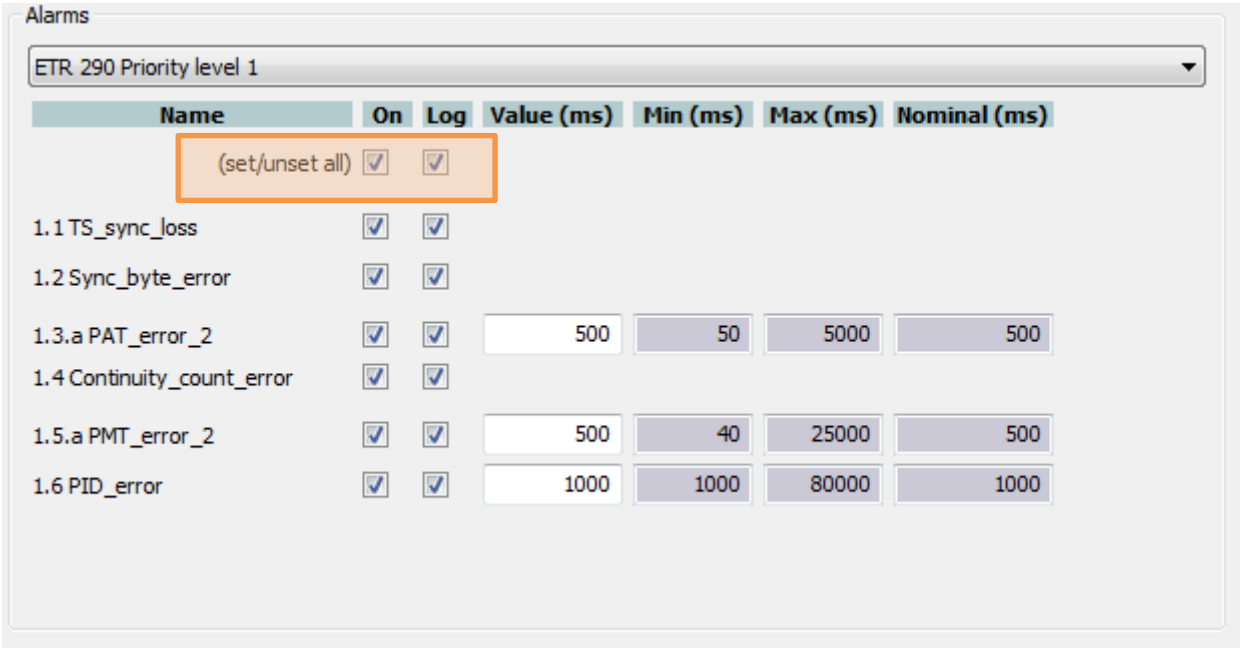
To enable logging an alarm, check the "Log" parameter on the line of the alarm and validate the modification.

Two modes are available for alarm firing:

- **Continuous mode:** alarm is fired and log until the parameter is out of defined values
- **Transition mode:** alarm is toggled and log once when the parameter change from valid range to invalid range and vice versa.



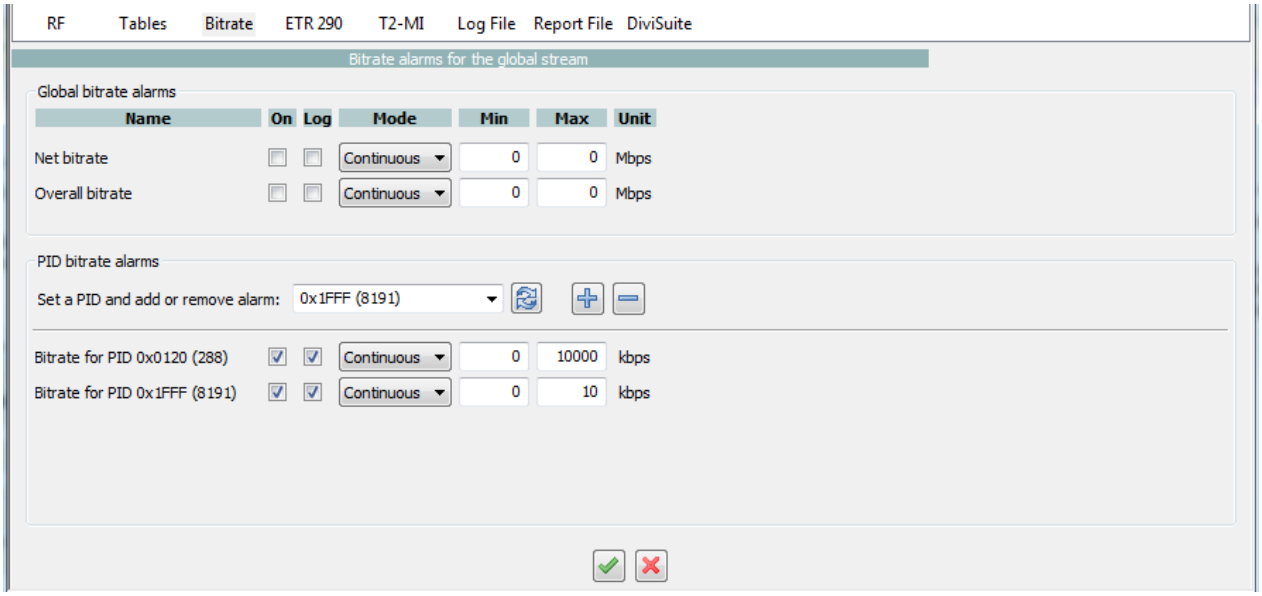
In order to enable or disable quickly all settings, some panels have a global selection check box.



5.11.3 *Bitrate setting*

Bitrate settings allow defining minimum and maximum threshold which fire an alarm. A threshold can be defined for:

- The overall bitrate of the MPEG2-TS stream
- The Net bitrate of the MPEG2-TS stream
- The bitrate of a specific PID



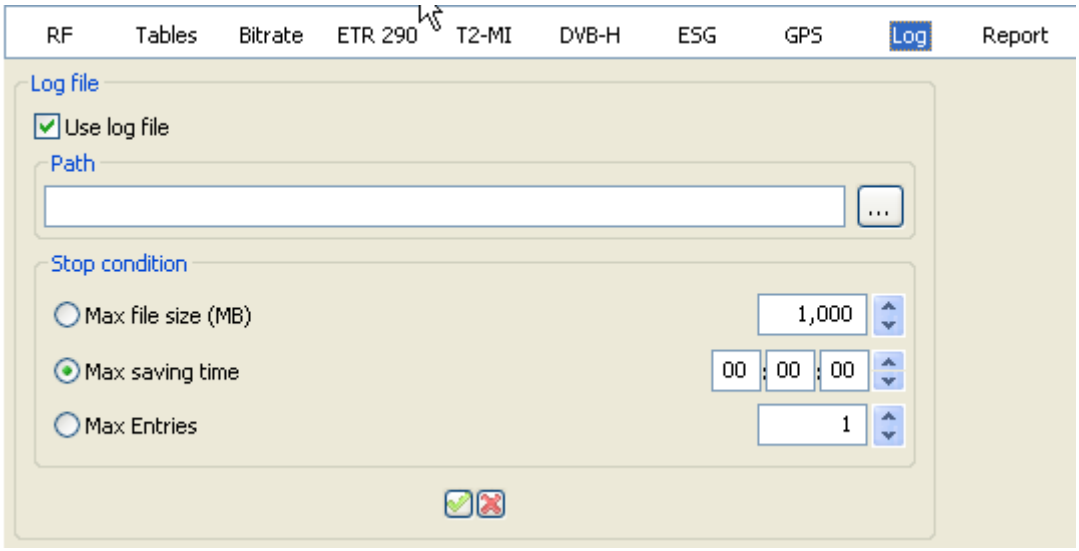
To add bitrate monitoring for a specific PID, enter the value in the text field of the "**PID bitrate alarms"** group box and click on "+" button. To remove it, enter the value in the text field and click on "-".

When an analysis is running, it is also possible to select between the PID of the stream. Click on the button to refresh the PID list of the drop down list then select the PID in the list.

5.11.4 Log setting

Log setting allows configuring the log file management of the DiviSuite. It allows defining the log file that will be used by DivSuite.

A stop condition on the log file needs to be defined. This allows recording logs only during specific analysis duration or preventing from a huge file size of the log file. This is configurable through the Max file size or Max saving time fields while the Max Entries field allows creating chunk of log files up to a specific number of chunks.



5.11.5 DiviSuite setting

This setting allows configuring the behavior of the application at startup. DiviSuite can automatically start an analysis on the same devive, same input and same channel of the analysis running when application was last quit.

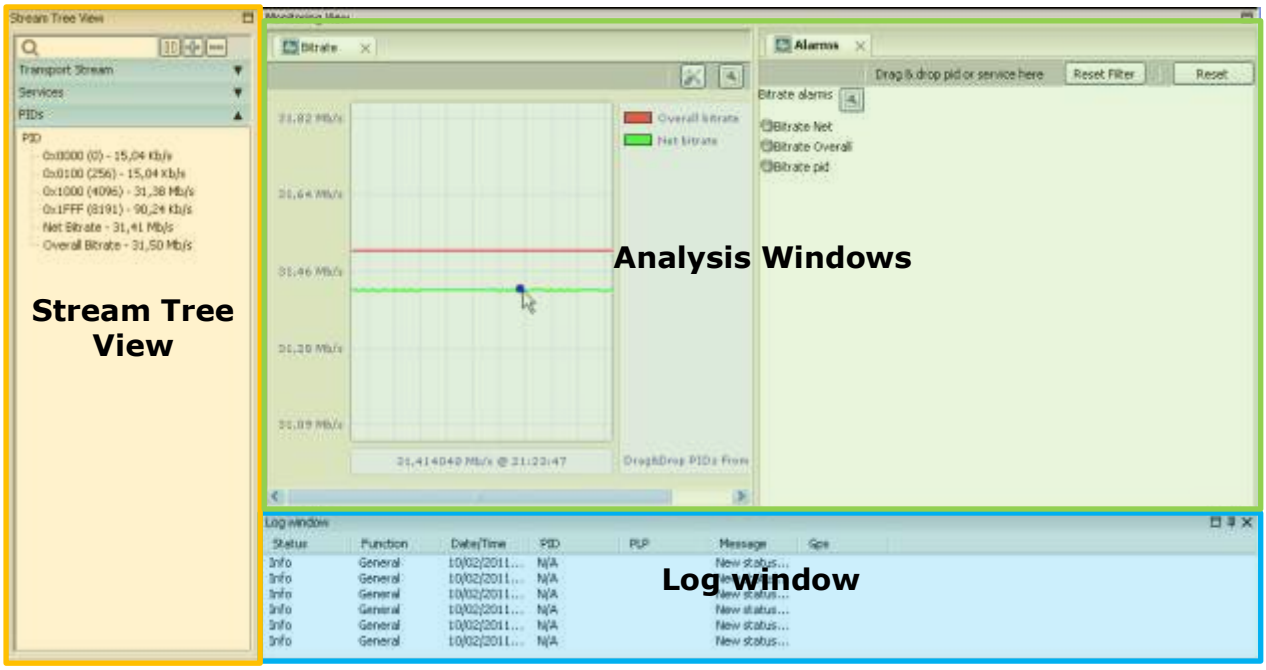
To do so, check the "Restart analysis at application start-up".

5.12 Monitoring View

5.12.1 Overview

The Monitoring View is a configurable area which receives monitoring windows for each analysis. Three main areas are available:

- Stream Tree View
- Analysis Windows
- Log Windows



5.12.2 Stream Tree View in DVB-T2

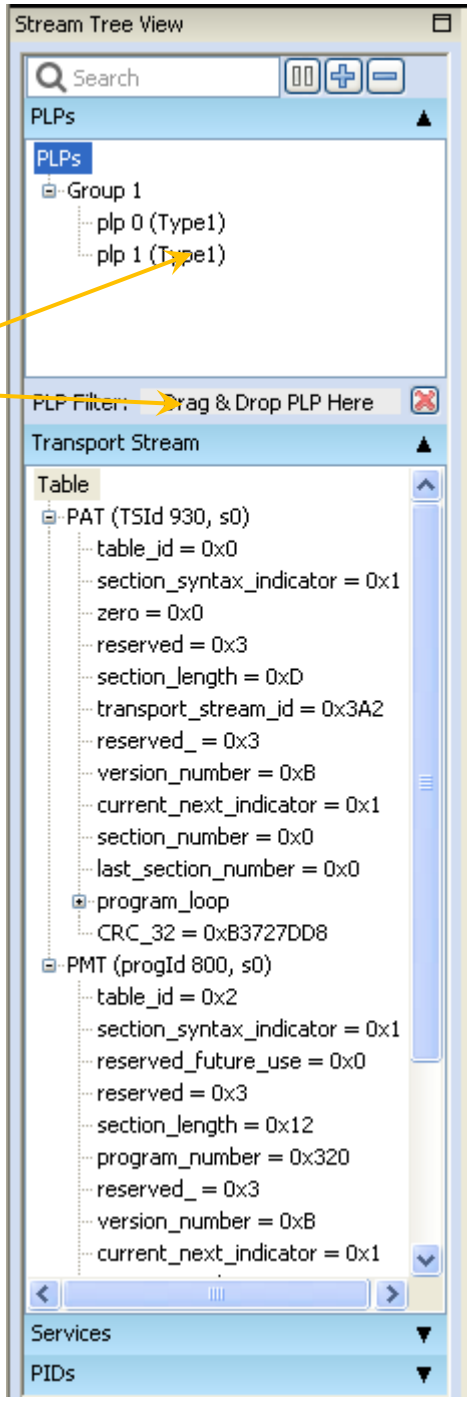
The Stream Tree View displays three kinds of information:

- A search tool
- Available PLPs if the incoming is DVB-T2 (RF or baseband)
- Transport Stream content parsing:

The search tool allows searching for a specific label in the complete Transport Stream tree. This allows to quick find a specific label (field name, value…) in Transport Stream, Services or PIDs tree.

The "PLPs" tab displays the list of Physical Layer Pipes if the incoming stream is a DVB-T2 one (RF or baseband). It allows selecting which PLP will be used for the analysis:

- With the mouse, select a PLP in the "PLPs" list
- Drag and drop to "PLP Filter"



The Transport Stream tab displays MPEG2-TS content of a PLP or of the incoming MPEG2-TS baseband stream. The content can be browsed by:

- PID list: list of PIDs detected
  - This is always available
- Transport Stream: list the SI tables and their content
  - Needs TS Analyzer plugin
- Services: list the Services and the associated program
  - Needs TS Analyzer plugin

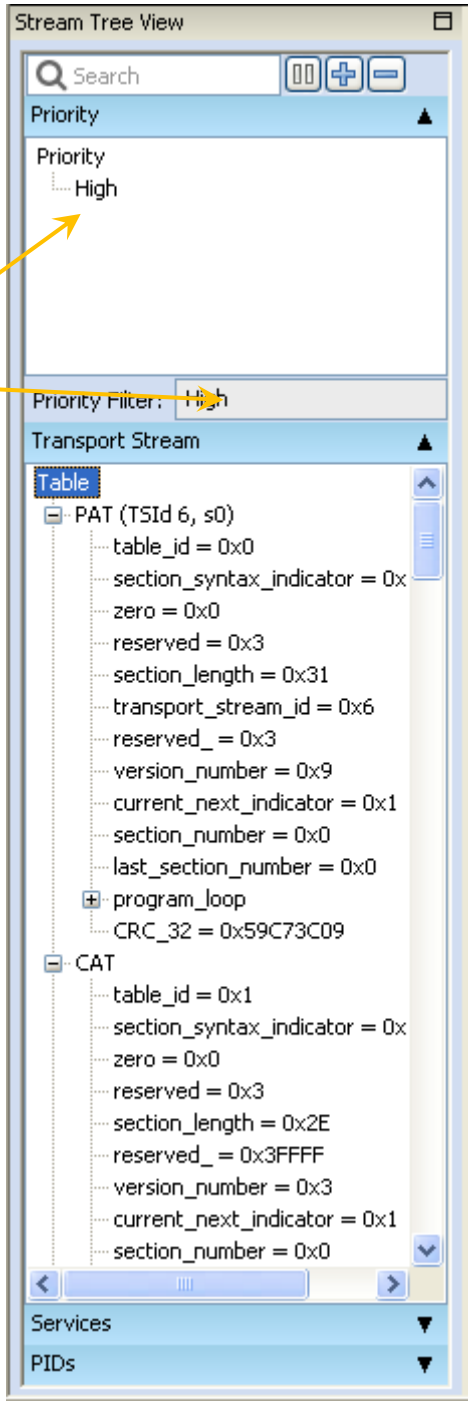
The information are displayed in trees that can be expanded or collapsed by using the + and – icons.

5.12.3 Stream Tree View in DVB-T

The Stream Tree View displays three kinds of information:

- A search tool
- Available hierarchical modes if the incoming is DVB-T
- Transport Stream content parsing:

The search tool allows searching for a specific label in the complete Transport Stream tree. This allows to quick find a specific label (field name, value…) in Transport Stream, Services or PIDs tree.



The "Priority" tab displays the list of Hierarchical Mode if the incoming stream is a DVB-T one It allows selecting which mode will be used for the analysis:

- With the mouse, select a priority in the "Priority" list
- Drag and drop to "Priority Filter"

The Transport Stream tab displays MPEG2-TS content of a PLP or of the incoming MPEG2-TS baseband stream. The content can be browsed by:

- PID list: list of PIDs detected
  - This is always available
- Transport Stream: list the SI tables and their content
  - Needs TS Analyzer plugin
- Services: list the Services and the associated program
  - Needs TS Analyzer plugin

The information are displayed in trees that can be expanded or collapsed by using the + and – icons.

5.12.4 Stream Tree View tools

5.12.4.1 Search tool

The « Search » field on the top of the Stream Tree View allows to search for a label or a value in all the Stream Tree View. Enter the searched value and hit “Enter” until you find the field of interest.

5.12.4.2 Report tool

Stream Tree View allows Copy/Paste functionality. Select the part of the tree you want to copy by clicking on it (it could be on the root or on a leaf of the tree), type CTRL+C.

The content of the selected field and all associated fields is copied in the clipboard of the Windows operating system and can then be copied in another application.

5.12.5 Logs View

This window displays the logs on the fly. The log for specific parameters can be configured and enabled via the “Settings” panel.

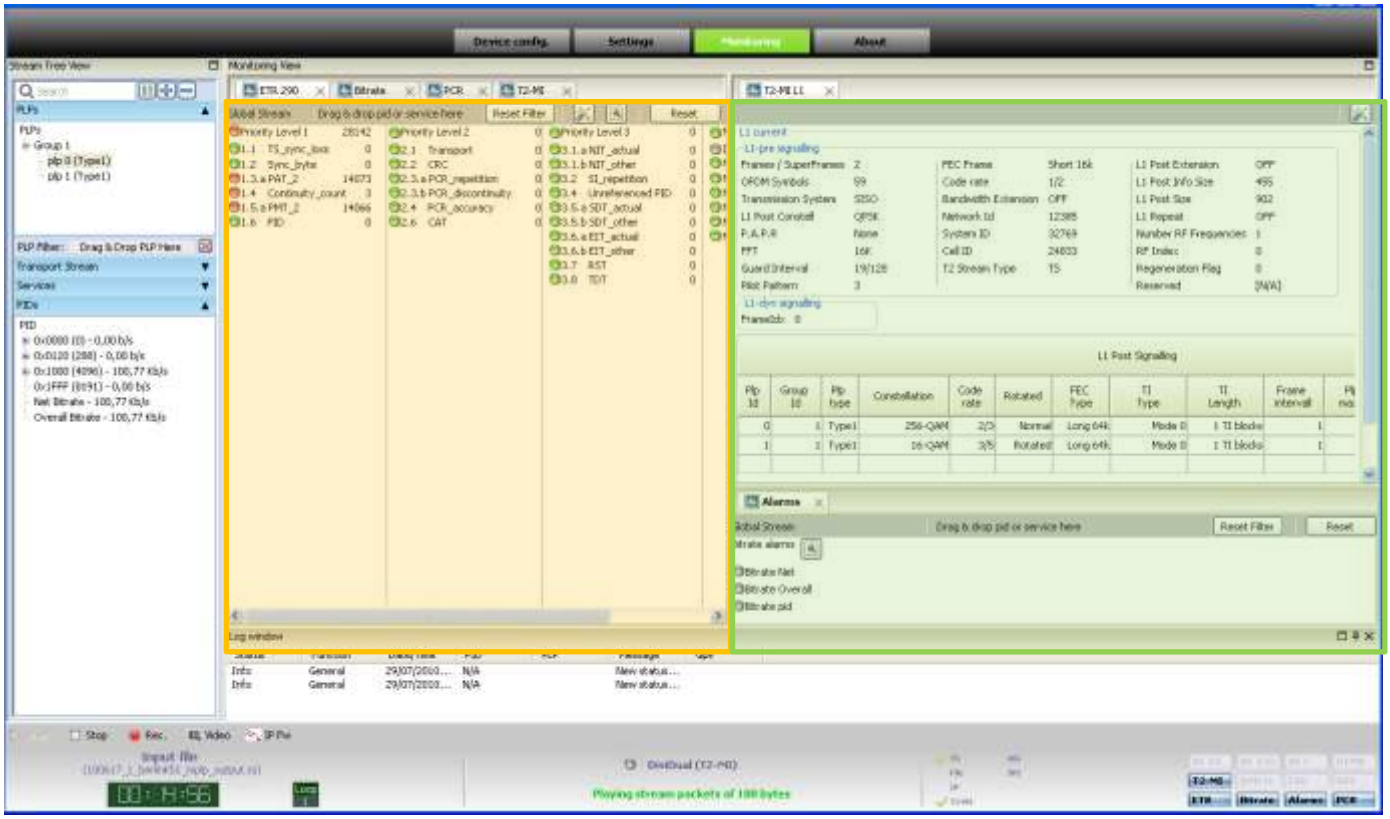
5.12.6 Monitoring Windows

The Monitoring View contains the panels for specific analysis. Those panels can be displayed or hidden by clicking on the button of the Monitoring View Control of the Status Bar Panel as defined in §0.

5.12.6.1 Customization of the Monitoring Windows position

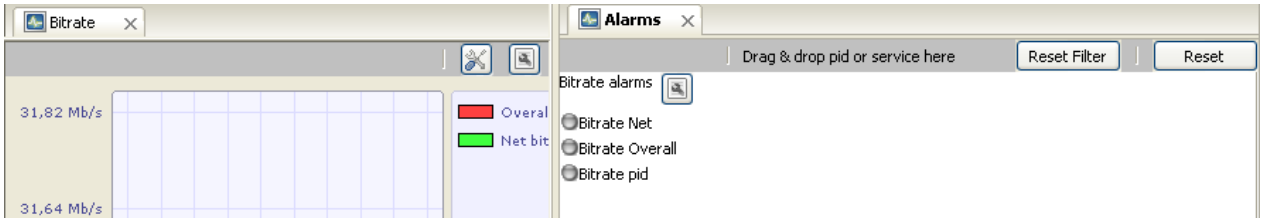
The Monitoring Windows position is configurable. It can be displayed by tabs (orange area below) or tiled (green area below). To configure your global view:

- Choose a view by selecting its tab
- Drag inside the monitoring view: Available area for dropping appears in blue.
- Drop when you find the position you want.



5.12.6.2 Typical control of monitoring windows

Monitoring Windows have some common controls to ease the use of DiviSuite.



The icon is a shortcut to go to the Device Configuration panel.

The icon is a shortcut to go to the settings panel of the analysis of the monitoring window.

Some windows also have PID or Services filtering. It allows running the analysis of the windows only on the selected PID or Services.

To run the analysis on a specific PID or Service, select this PID or Service in the Stream Tree View and drop it in the indicated area ("Drag & drop pid or service here").

The "Reset Filter" button removes the filtering analysis of the current PID or Services to apply it to the whole stream.

The "Reset" button reset all values of the analysis windows. It is for example used to reset error counters.

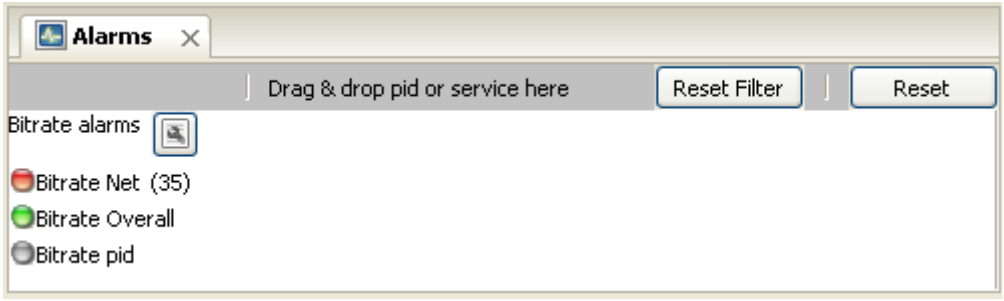
5.12.7 Alarm Monitoring Window

Alarms are fired when a parameter go outside the range defined in the settings panel. Alarm analysis can be done on the whole stream content or specific part by PID or service filtering.

An alarm has three possible states:

- Greyed: the alarm has not been activated in the Settings panel
- Green: alarm is activated and no out of range has been detected on the parameter
- Red: alarm is activated and out of range has been detected on the parameter. A counter is displayed at the right of the alarm indicating how many times it has been fired, according to continuous or transition mode defined in the Settings Panel.

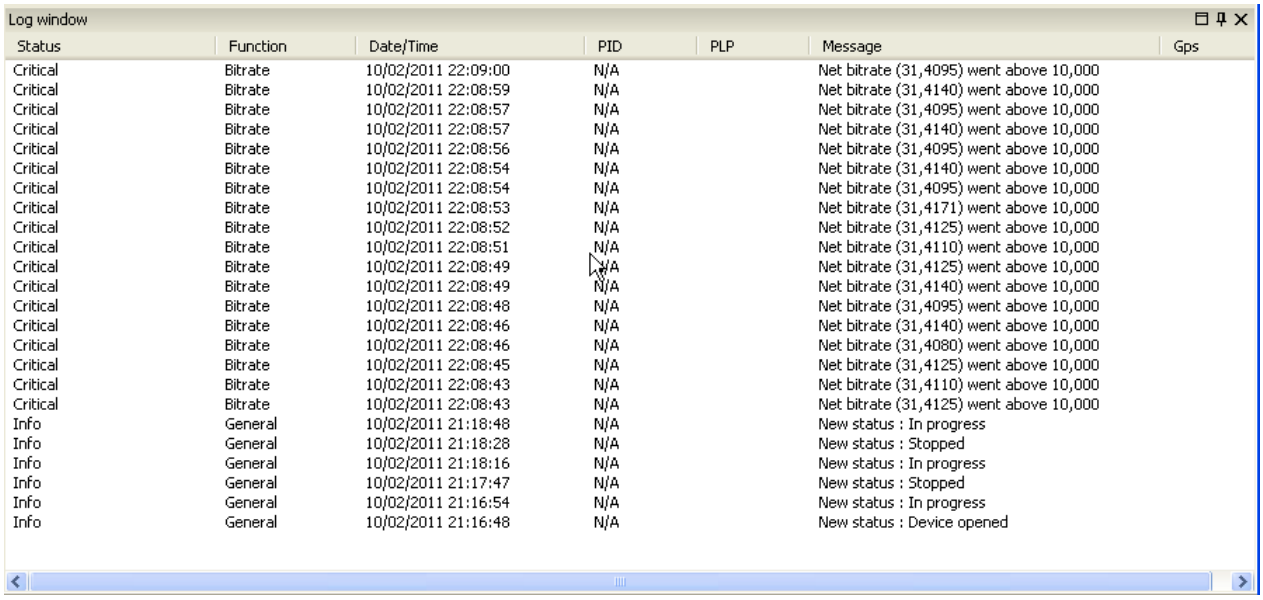
Each analysis has its own alarms defined. All activated alarm will be displayed in this panel.



5.12.8 Log Monitoring Window

The Log monitoring view displays all events of interest of the analysis: analysis start and stop, alarms for which logging has been enabled…

Independently of Log file activation in the Settings Panel, this window is always displayed. It can be docked using the icon in its top right.


Log window

Status	Function	Date/Time	PID	PLP	Message	Gps
Critical	Bitrate	10/02/2011 22:09:00	N/A		Net bitrate (31,4095) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:59	N/A		Net bitrate (31,4140) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:57	N/A		Net bitrate (31,4095) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:57	N/A		Net bitrate (31,4140) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:56	N/A		Net bitrate (31,4095) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:54	N/A		Net bitrate (31,4140) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:54	N/A		Net bitrate (31,4095) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:53	N/A		Net bitrate (31,4171) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:52	N/A		Net bitrate (31,4125) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:51	N/A		Net bitrate (31,4110) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:49	N/A		Net bitrate (31,4125) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:49	N/A		Net bitrate (31,4140) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:48	N/A		Net bitrate (31,4095) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:46	N/A		Net bitrate (31,4140) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:46	N/A		Net bitrate (31,4080) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:45	N/A		Net bitrate (31,4125) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:43	N/A		Net bitrate (31,4110) went above 10,000	
Critical	Bitrate	10/02/2011 22:08:43	N/A		Net bitrate (31,4125) went above 10,000	
Info	General	10/02/2011 21:18:48	N/A		New status : In progress	
Info	General	10/02/2011 21:18:28	N/A		New status : Stopped	
Info	General	10/02/2011 21:18:16	N/A		New status : In progress	
Info	General	10/02/2011 21:17:47	N/A		New status : Stopped	
Info	General	10/02/2011 21:16:54	N/A		New status : In progress	
Info	General	10/02/2011 21:16:48	N/A		New status : Device opened	

5.12.9 Bitrate Monitoring View

The Bitrate monitoring view display bitrate for overall and net bitrate as well as bitrate for specific PIDs. To add a PID to this display, select the PID in the Stream Tree View and drag'n'drop it in this window.

The icon is used to show ( ) or hide ( ) the graph of a specific bitrate. The icon allows moving a PID from the monitoring graph.

When moving the mouse pointer on top of graphs, the displayed is freezed and value is displayed in the bottom of the windows with the computer time of the measure.

5.13 Profile management

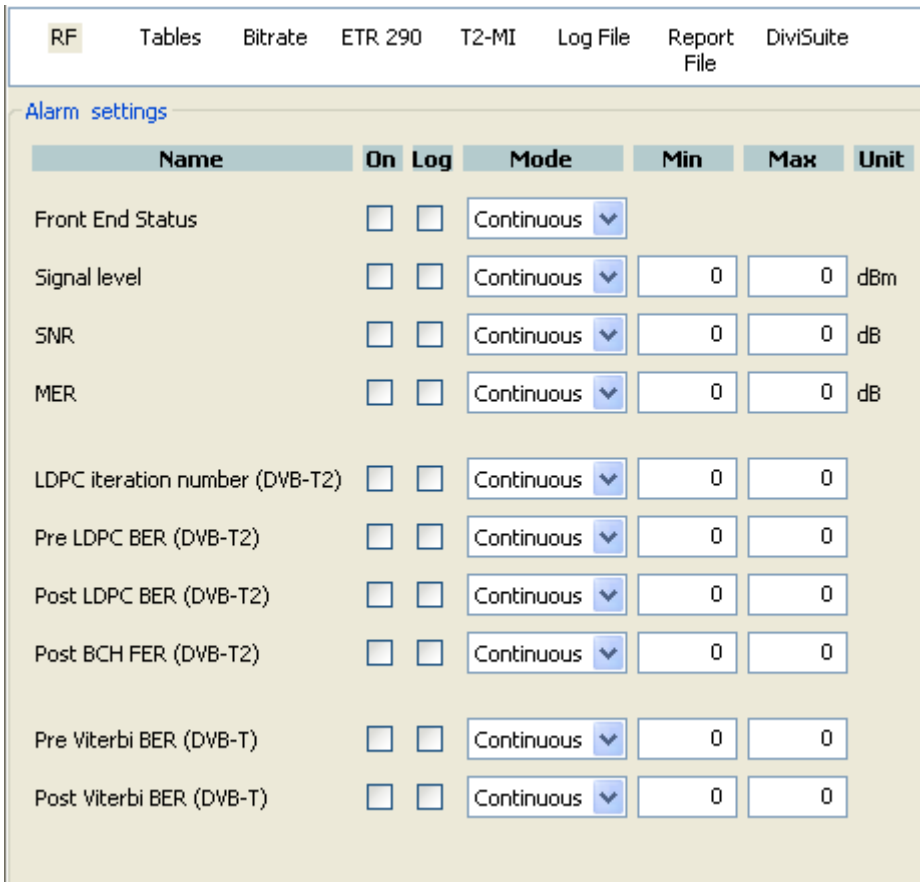
In order to keep track of configuration, DiviSuite uses profiles to store the settings. Those profiles are linked to the computer on which the DiviSuite is runned and to the device for which configuration has been done.

6 RF Scope plugin

The RF Scope plugin manage RF Signal Quality monitoring. It displays information on RF signal (SNR, MER, Impulse Response, Constellation, LDPC iteration…). It also displays information on the current modulation. All the parameters depend on the standard: DVB-T, DVB-T2, DVB-C, DTMB…

6.1 Settings Panel

The Settings panel of RF Scope allows setting alarms on RF values as displayed below. Proceed as described in §5.11.1 and 5.11.2 for the configuration.



Note that when analyzing a specific standard, only the alarms belonging to this standard will be checked (LDPC for DVB-T2, Viterbi for DVB-T for example).

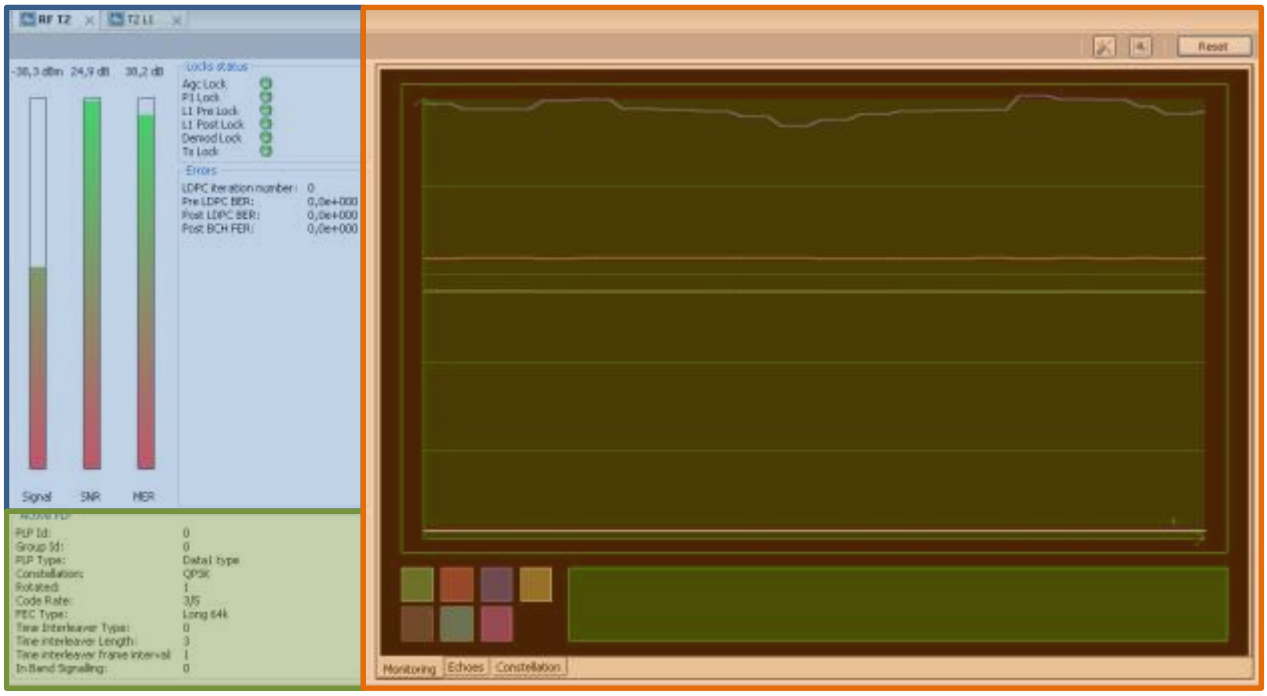
6.2 RFScope Monitoring view

RFScope Monitoring View includes:

- Instantaneous value display using bar graphs,
- Historical value display using graphs
- Modulation parameters information. In the case of DVB-T2, a second panel, T2 L1 is also available to display all modulation parameters of the DVB-T2 modulation.

Instantaneous Values

Historical view

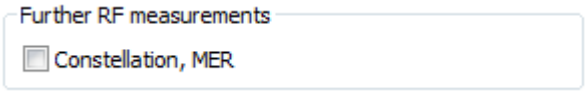


DVB-T2 Active PLP Information

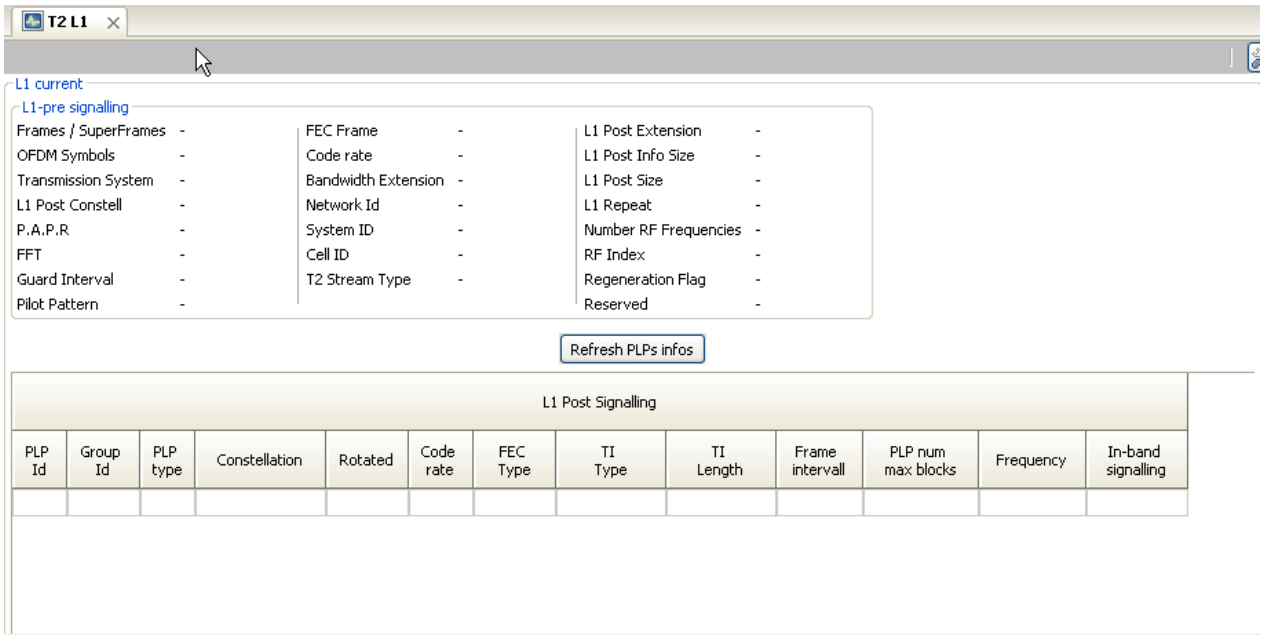
Depending on the connected device, the Historical view also includes:

- Echoes (channel impulse response)
- Constellation

On some devices, Constellation display and Transport Stream reception are exclusive. In this case, a "Further RF Measurements" check box is available to select the current mode.



The T2 L1 view displays information conveyed by the L1 signaling. To get L1 post signaling information for all PLPs, click on the "Refresh PLPs infos" to get the values. This stops the current reception of the PLP during the measurement.

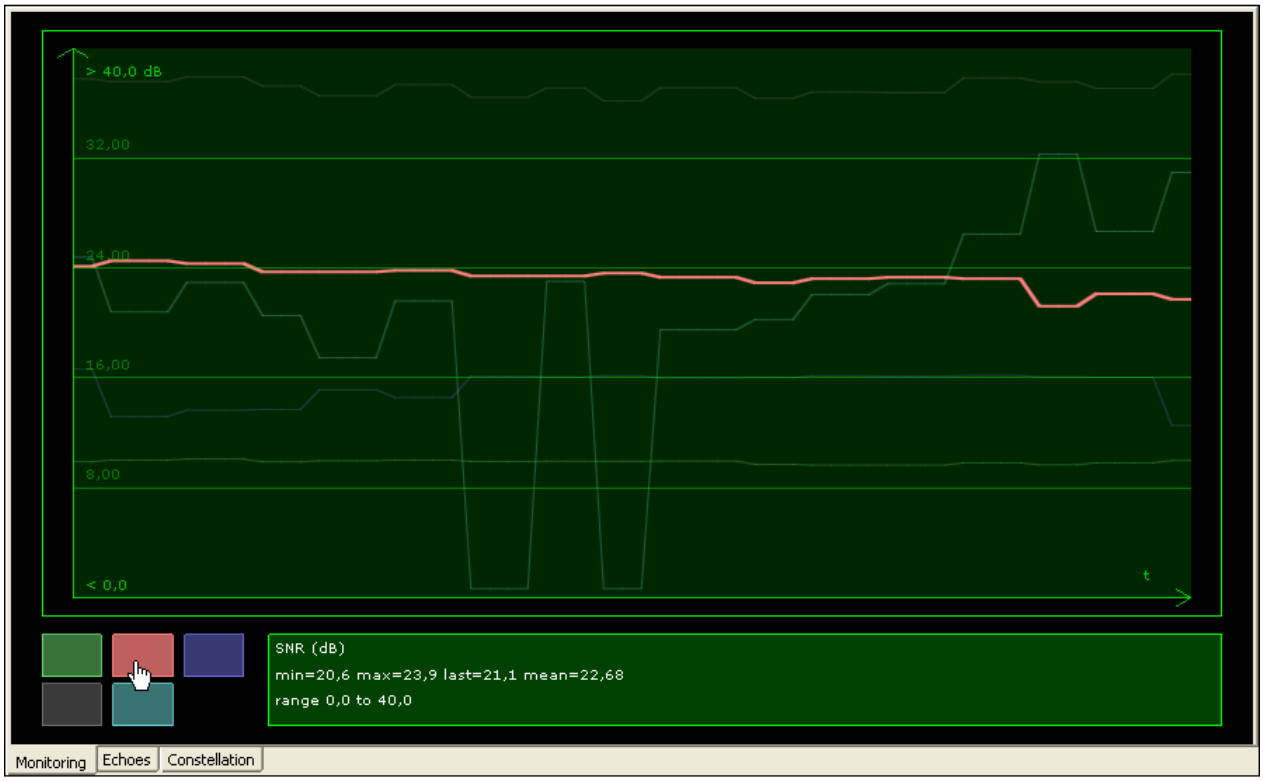


6.2.1 Monitoring views

This view provides a monitoring of instantaneous values over the last 60 seconds:

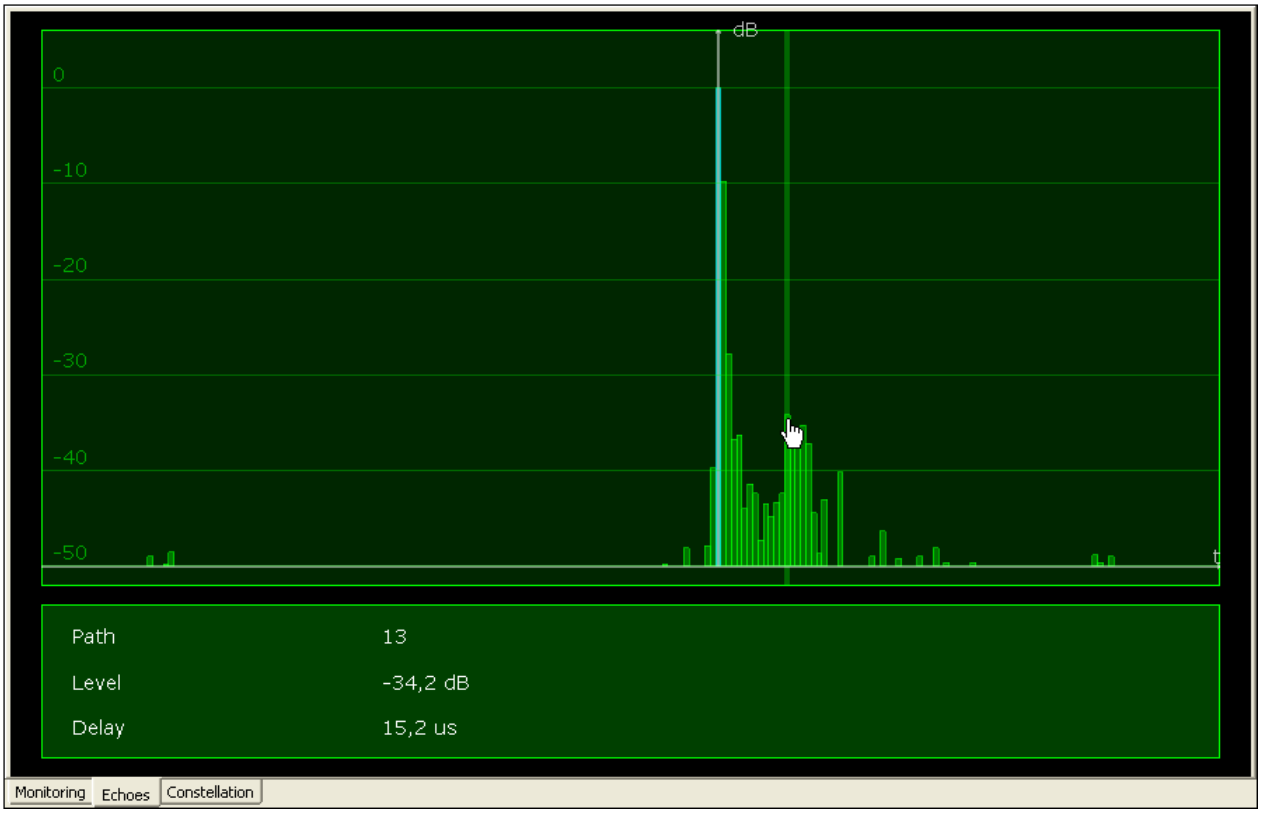
- Signal level
- SNR
- MER
- LDPC iteration number, Pre LDPC, Post LDPC and Post BCH BER for DVB-T2
- Pre Viterbi BER and Post Viterbi BER for DVB-T

For each measurement, use can check the minimum value, the maximum value and the average over the last 60 seconds. This can be done by **dragging the mouse pointer over the colored rectangle in the top left of the view**.



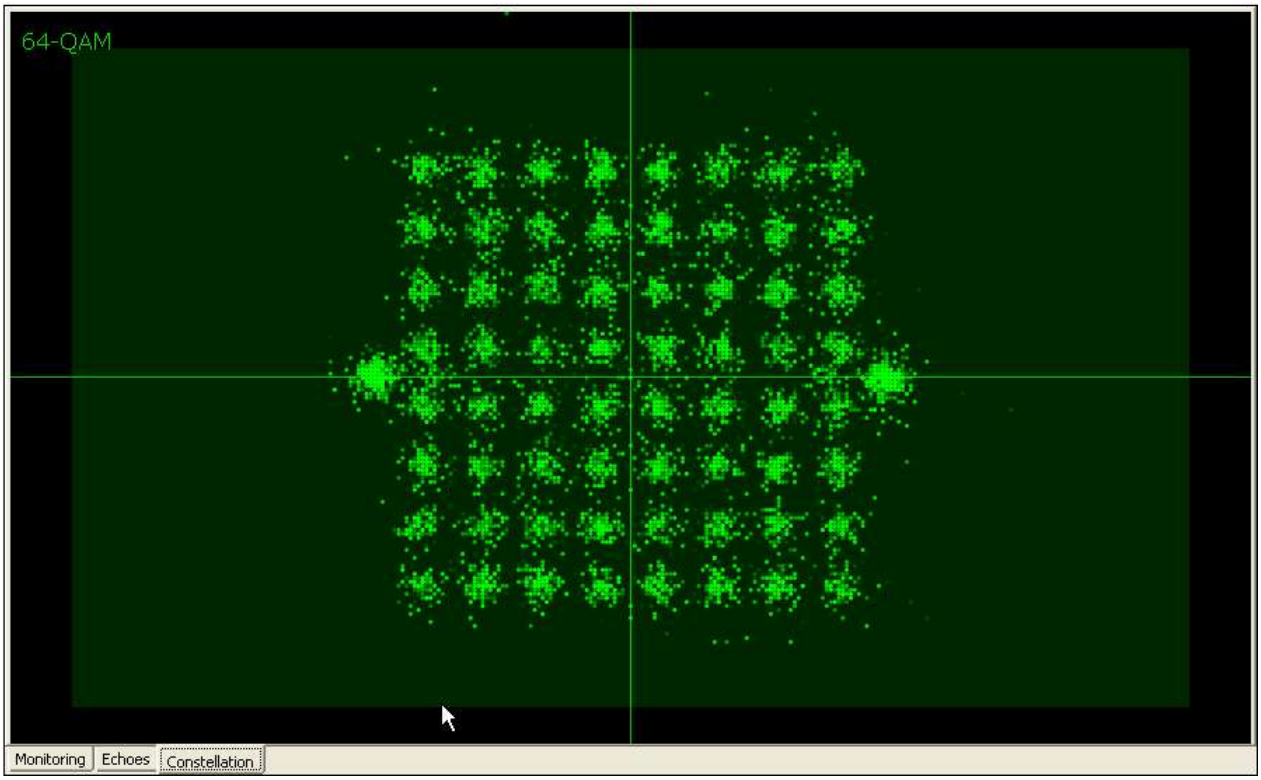
6.2.2 Echoes Pattern (Channel Impulse Response)

This view displays the instantaneous Channel Impulse Response detected by the receiver.
Main echo appears in blue. **User can check the power level and delay of other echoes from main echo by dragging the mouse pointer over the echo.** Values are displayed in the text area below the graphical view.



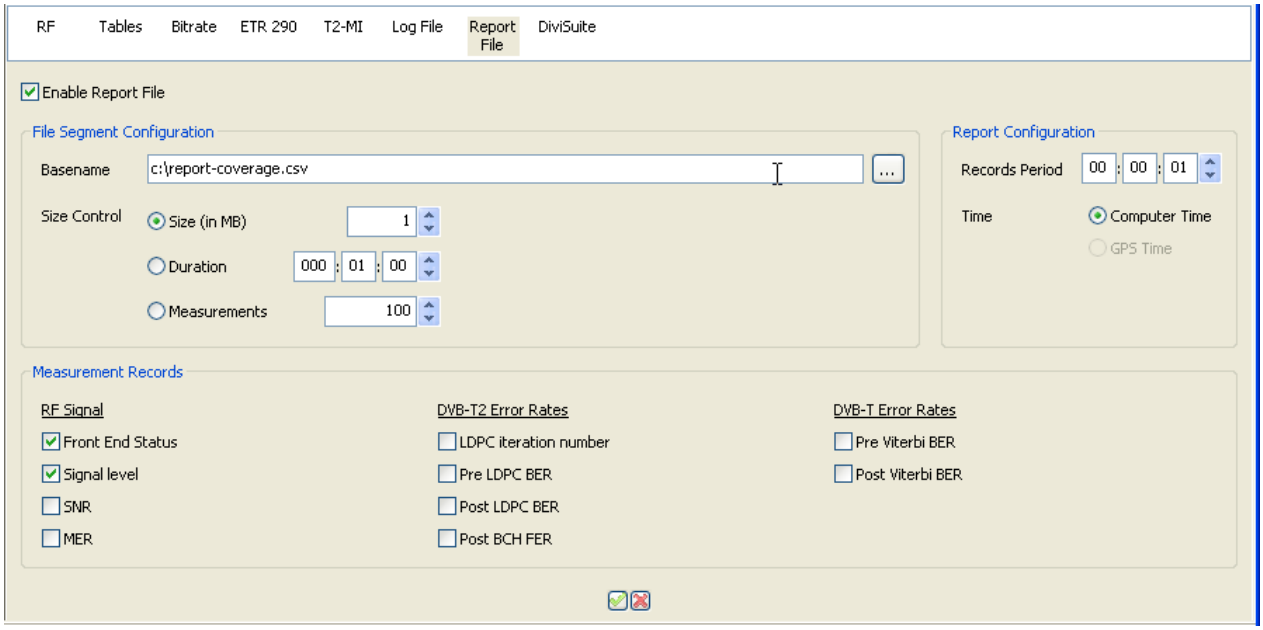
6.2.3 Constellation

This view displays the constellation of the received signal.



6.3 Report File

When RFScope plugin is enabled, user can access the Report File feature though the settigns panel. It allows creating files with periodic measurement. Report files are CSV file with values separated by a semi colon and field name as the first line.



6.3.1 File Segment Configuration

Report File feature allows creating multiple files for the measurement sessions. These files are named segment file. Each segment size can be controlled by the user by setting:

- The maximum segment size in Mega Bytes
- Or the maximum segment time duration
- Or the maximum number of measurements in the segment

Each segment will be named with the following rule:

- Use destination directory of the Basename field
- Use the file basename with _{ID} suffix, where {ID} is the segment number
- Use file extension of the Basename

The screenshot below will lead to creating c:\report-coverage_1.csv, c:\report-coverage_2.csv, … files with a size of 1MB.

Please note that if segment files already exist with the same rule, they will not be over written. Numbering will start at the next available index.

6.3.2 Report Configuration

The Record Period field allows setting the periodicity of the measurements, with a minimum of 1 second.

7 TS Analyzer plugin

The TS Analyzer plugin manage SI table decoding (displayed in Stream Tree View), ETR 290 analysis and PCR analysis.

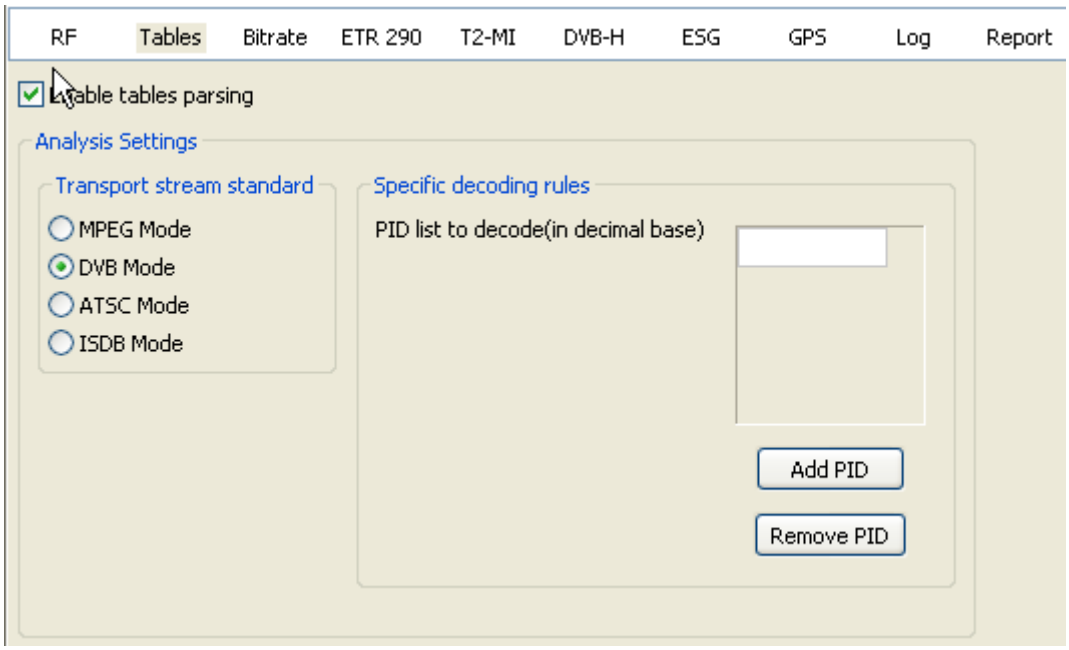
7.1 Setting Panel

Two settings panels are linked to TS Analyze plugin: Tables and ETR 290.

7.1.1 Table settings

The Tables analysis allows decoding of System Information tables of the incoming stream. It can be enabled or disabled in the Setting panel.

The Transport Stream Standard allows choosing which standard decoding should be applied to the stream. Already available table decoding standards are MPEG2-TS, DVB, ATSC or ISDB. It is also possible to force table decoding on a specific PID. Add and remove PID in the "Specific decoding rules" area.

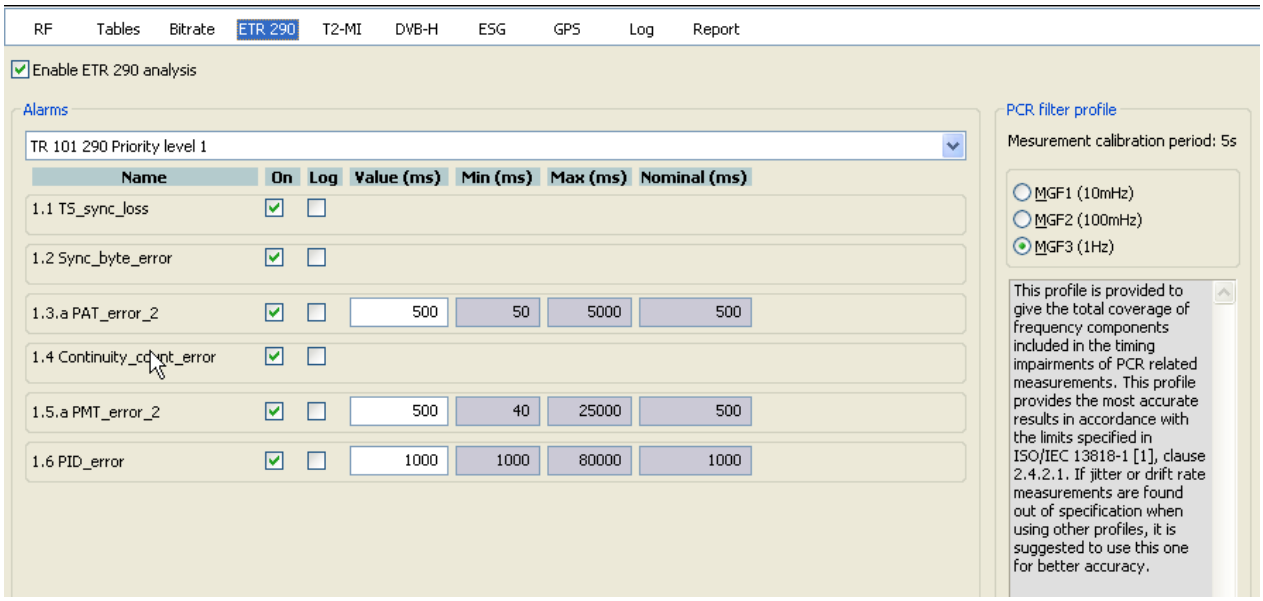


7.1.2 ETR 290 Settings

The ETR 290 analysis allows PCR and ETR 209 analysis of the stream. It can be enabled or disable.

ETR 209 Level 1, 2 and 3 are supported. Use the drop down list to view settings of a specified level. Alarms can be enabled or disabled for each parameters.

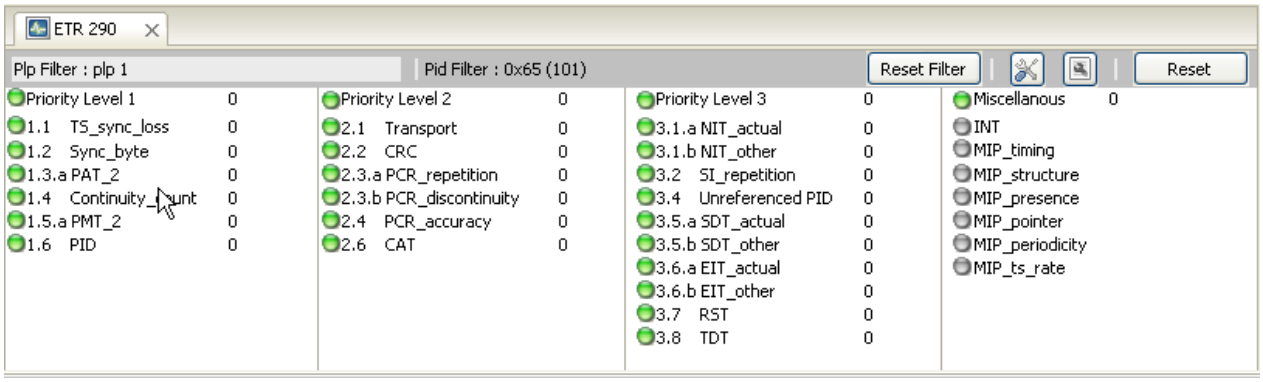
PCR analysis is configured using the PCR filter profile as defined by the standard: MGF1, MGF2 and MGF3 profiles. MGF1 gives the better results in term of accuracy of measurements but needs a lot of time to be valid while MGF3 is fast to provide results but with less accuracy.



7.2 TS Analyzer Monitoring view

TS Analyzer plugin includes ETR 290 monitoring window and PCR monitoring window.

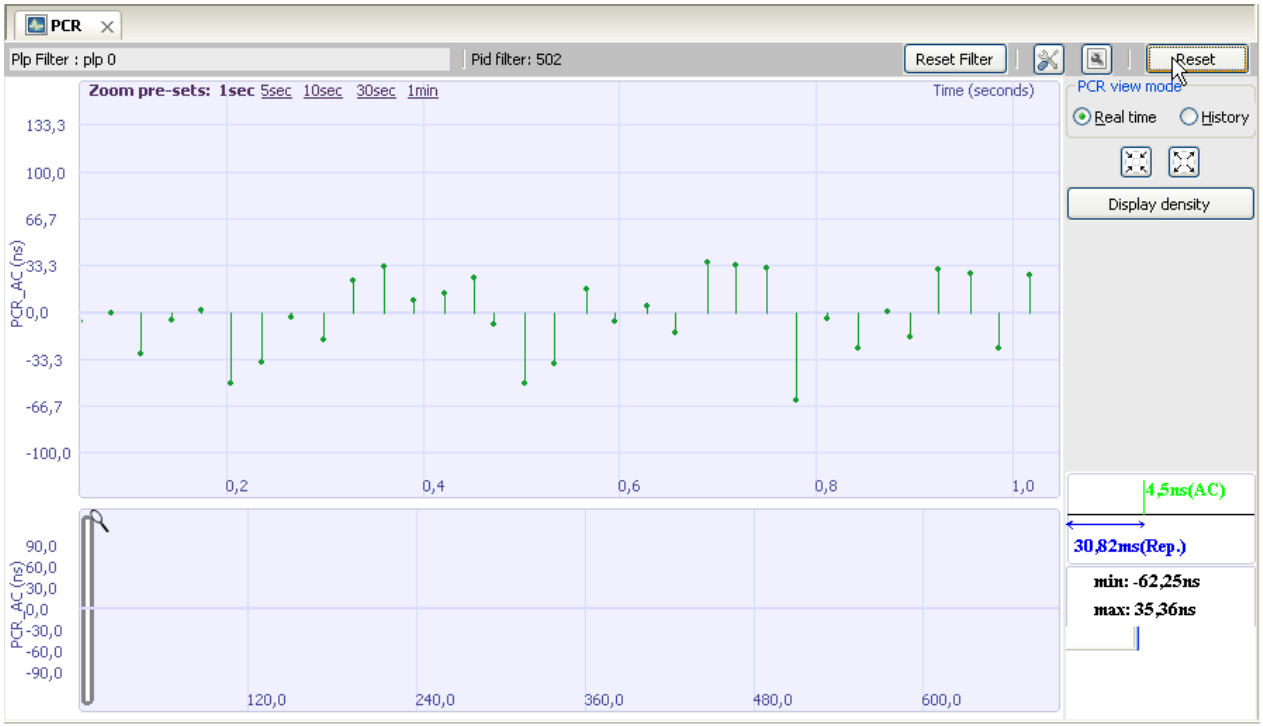
The ETR 290 monitoring window display alarms for each enabled parameter on the whole stream content or specific part by PID or service filtering.



The PCR analysis monitoring window display PCR accuracy measurements on the whole stream content or specific part by PID or service filtering.

Accuracy values can be viewed by density of history by clicking on the "Display Density"/"Display History" button.

The icons allow managing the zoom on the graph.

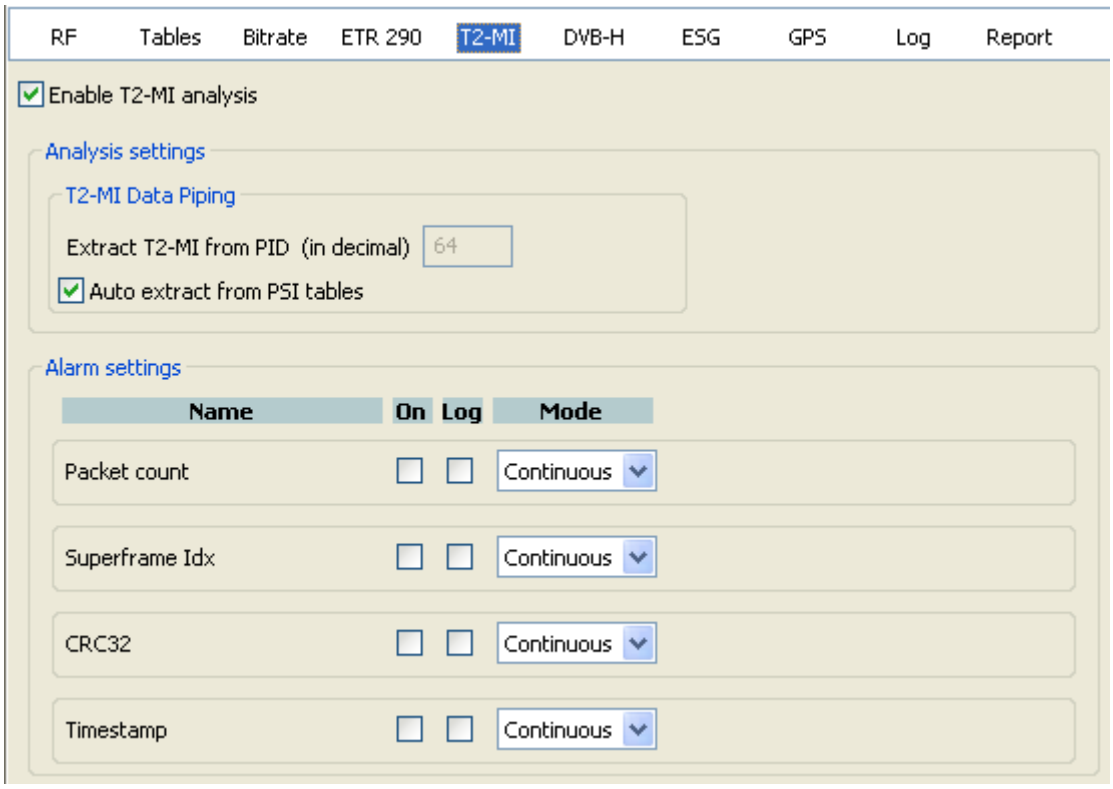


8 T2MI Analyzer plugin

The T2MI Analyzer plugin manage T2-MI baseband signal monitoring. The signal can come from ASI, IP or file input. It displays information on T2-MI structure and DVB-T2 parameters.

8.1 Setting Panel

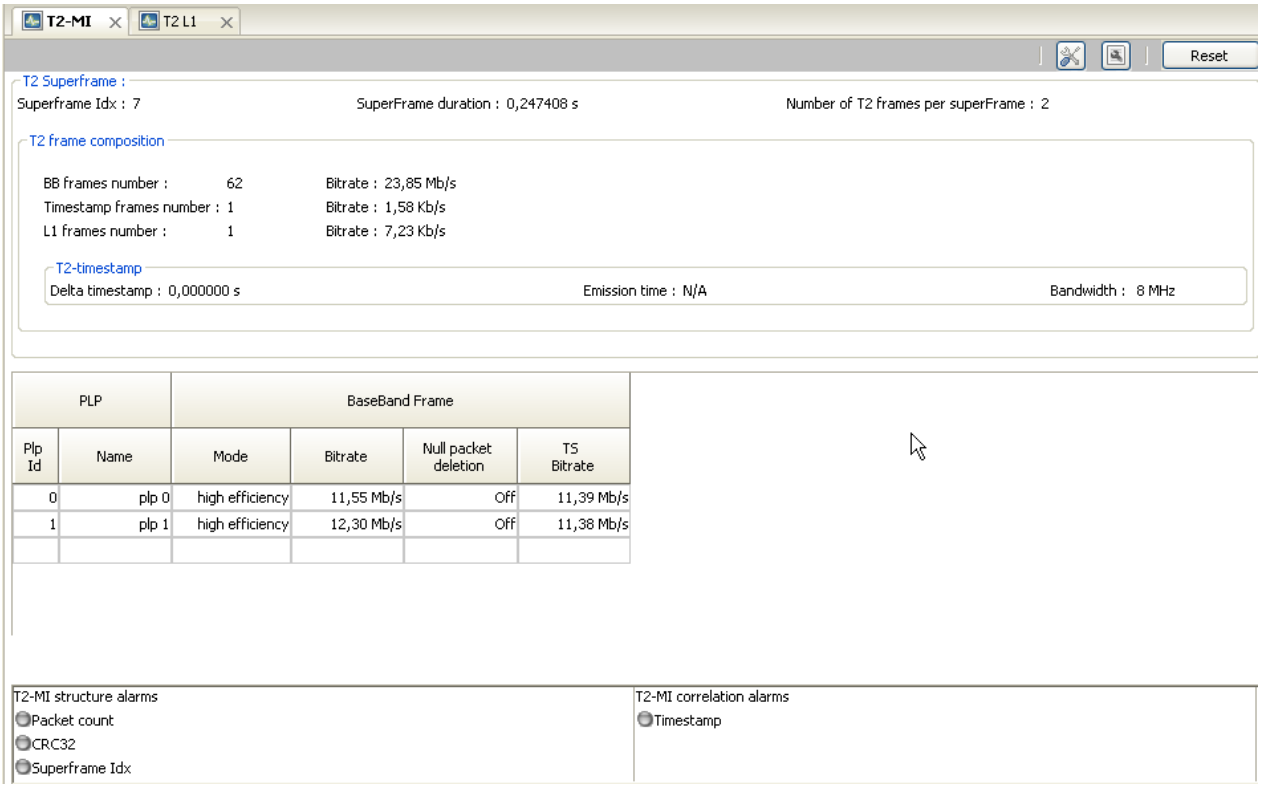
T2-MI analysis can be disabled through the setting panel. T2-MI streams are embedded in a MPEG2-TS stream using data piping. Depending on the equipment delivering the T2-MI stream, the data piping PID can be extracted from PAT and PMT tables as a private data PID or PID identification can be manually entered. For using Auto extraction from PSI tables (PAT, PMT), TS Analyzer plugin is mandatory.



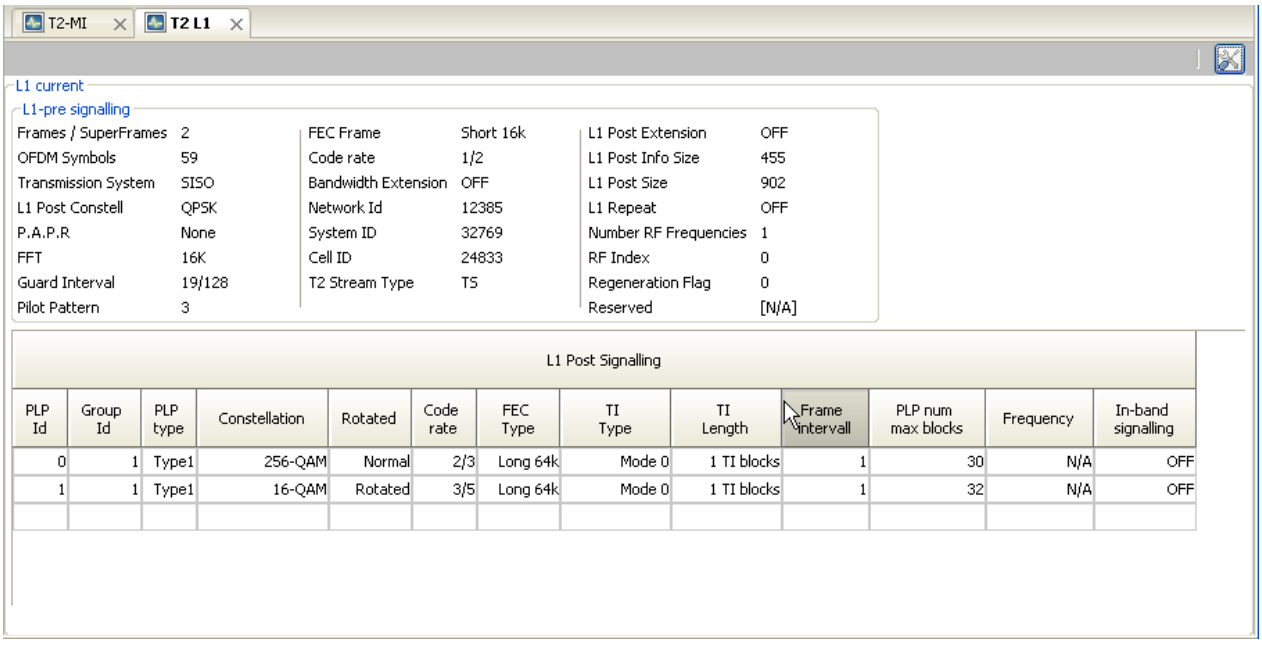
8.2 T2MI Analyzer Monitoring view

Monitoring windows include T2 L1 and T2-MI windows.

The T2-MI window display analysis of T2-MI encapsulation. It displays in real time bitrate for each conveyed PLP.



The T2-L1 window displays the L1 signaling of the DVB-T2 parameters which will be used by the modulator for generating the RF signal.



9 Equipment return for repair

In case of any trouble with one of ENENSYS Technologies' products, please report it to our Technical Support team via email (support@enensys.com). Your request should specify Part Number and Serial Number as displayed on the bottom label of the equipment, with a description of the defect, reference of Purchase Order if possible, and your full details.

Upon receiving your request, a support engineer will get in touch with you in order to surely identify the source of your problem. If equipment has to be returned for repair, a RMA2[1] number will be provided to you. You will need to indicate it on the shipping box of the faulty equipment, and/or add it in your communication with our support team. Your equipment will be shipped back to you along with a repair report.

[1] Returned Material Authorization

10 Upgrades and Privileged Area

A privileged area (http://privileged.enensys.com) is available on ENENSYS' web-site. Any registered user has access to the privileged area where general documentation, user's manuals, software and product upgrades can be downloaded. In order to get access to the privileged area, you will have to register on your first access. You will then receive a password that will give you access to the privileged area.

Product upgrades will be announced on the registered users mailing list.

11 Contact Information

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